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NATIONAL DAM SAFETY PROGRAM. ISCHUA CREEK WATERSHED DAM NUMBER --ETC(U)

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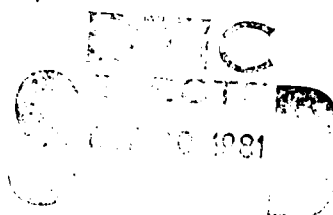
REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A105774	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Inspection Report Ischua Creek Watershed Dam Site #1 Allegheny River Basin, Cattaraugus County, NY Inventory No. 583		5. TYPE OF REPORT & PERIOD COVERED Phase I Inspection Report National Dam Safety Program
7. AUTHOR(s) ROBERT J. FARRELL		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Erdman, Anthony, Associates 242 Andrews Street, P.O. Box 9589 Rochester, New York 14604		8. CONTRACT OR GRANT NUMBER(s) DACW51-81-C-0017
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army 26 Federal Plaza New York District, Coff New York, New York 10287		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 11
13. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Department of the Army 26 Federal Plaza New York District, Coff New York, NY 10287		12. REPORT DATE 18 Aug 1981
15. DISTRIBUTION STATEMENT Approved for public release; Distribution unlimited.		14. SECURITY CLASS. (of this report) UNCLASSIFIED CLASSIFICATION/DOWNGRADING
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
19. SUPPLEMENTARY NOTES		
21. KEY WORDS (Continue on reverse side if necessary and identify by block number) Dam Safety National Dam Safety Program Visual Inspection Hydrology, Structural Stability Ischua Creek Watershed Dam Site #1 Cattaraugus County Allegheny River Basin		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Examination of available documents and visual inspection of Ischua Creek Watershed Dam No. 1 and appurtenant structures did not reveal conditions which constitute a hazard to human life or property.		

Using the Corps of Engineers screening criteria for review of spillway adequacy, it has been determined that the dam would not be overtopped under full PMF conditions. The PMF routed through the reservoir required 98 percent of the spillway outflow capacity. The spillway capacity is, therefore, judged as adequate.

The following remedial measures should be performed within one year from notification to owner:

- Remove the trees and saplings including the roots from the embankment slopes. Backfill the resulting voids with suitable compacted material.
- Regrade and fill in the erosion gullies on the downstream slope and around the outlet structure. Reseed the disturbed areas.
- Place a grate over the opening in the impact basin between the inlet wall and baffle.
- The debris and vegetation should be cleared from the downstream channel, outlet basin, auxiliary spillway channel and embankment surfaces periodically. A program of periodic mowing and cutting of the embankment and outlet channels should be provided.
- Develop a formal written downstream warning system to alert the appropriate officials and residents in the event of an emergency.
- Provide a program of periodic inspection and maintenance of the dam and appurtenances including yearly operation and lubrication of the gate systems. Document this information for future reference.

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ALLEGHENY RIVER BASIN

**ISCHUA CREEK WATERSHED
DAM No. 1**

**CATTARAUGUS COUNTY, NEW YORK
INVENTORY No. N.Y. 583**

**PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM**



NEW YORK DISTRICT, CORPS OF ENGINEERS

AUGUST 1981

**APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED**

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the Investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I Inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test Flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event a finding that a spillway will not pass the Test Flood should not be interpreted as necessarily posing a highly inadequate condition. The Test Flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Ischua Creek Watershed Dam No. 1
State Located:	New York
County Located:	Cattaraugus
Stream:	Ischua Creek
Basin:	Allegheny River
Date of Inspection:	April 2, 1981

ASSESSMENT

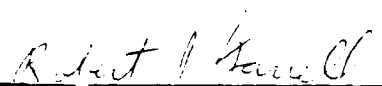
Examination of available documents and visual inspection of Ischua Creek Watershed Dam No. 1 and appurtenant structures did not reveal conditions which constitute a hazard to human life or property.

Using the Corps of Engineers screening criteria for review of spillway adequacy, it has been determined that the dam would not be overtopped under full PMF conditions. The PMF routed through the reservoir required 98 percent of the spillway outflow capacity. The spillway capacity is, therefore, judged as adequate.

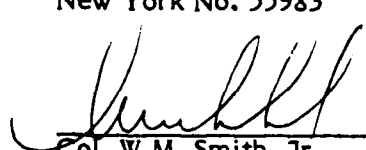
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- Develop a formal written downstream warning system to alert the appropriate officials and residents in the event of an emergency.
- Provide a program of periodic inspection and maintenance of the dam and appurtenances including yearly operation and lubrication of the gate systems. Document this information for future reference.


Robert J. Farrell, P.E.
New York No. 55983

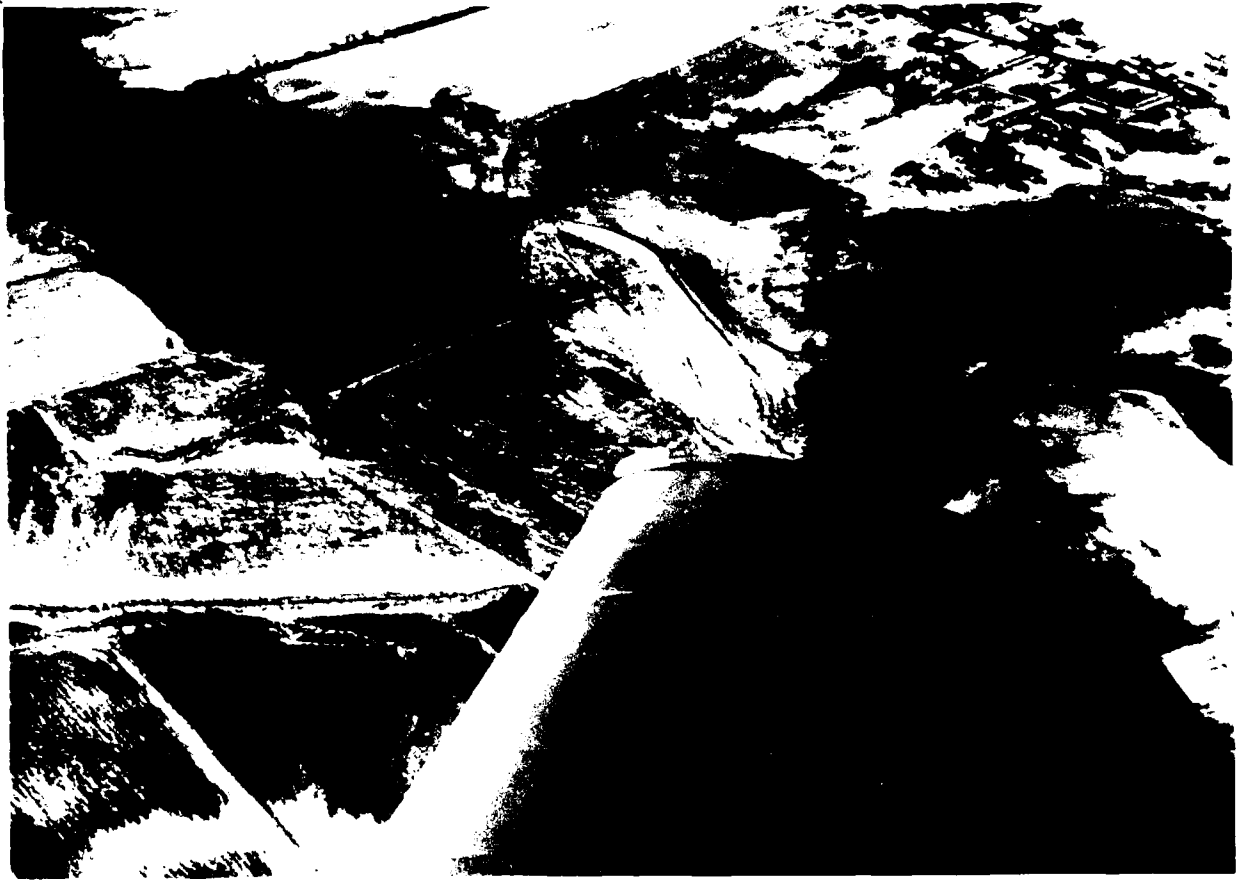
Approved by:


Col. W.M. Smith, Jr.
New York District Engineer

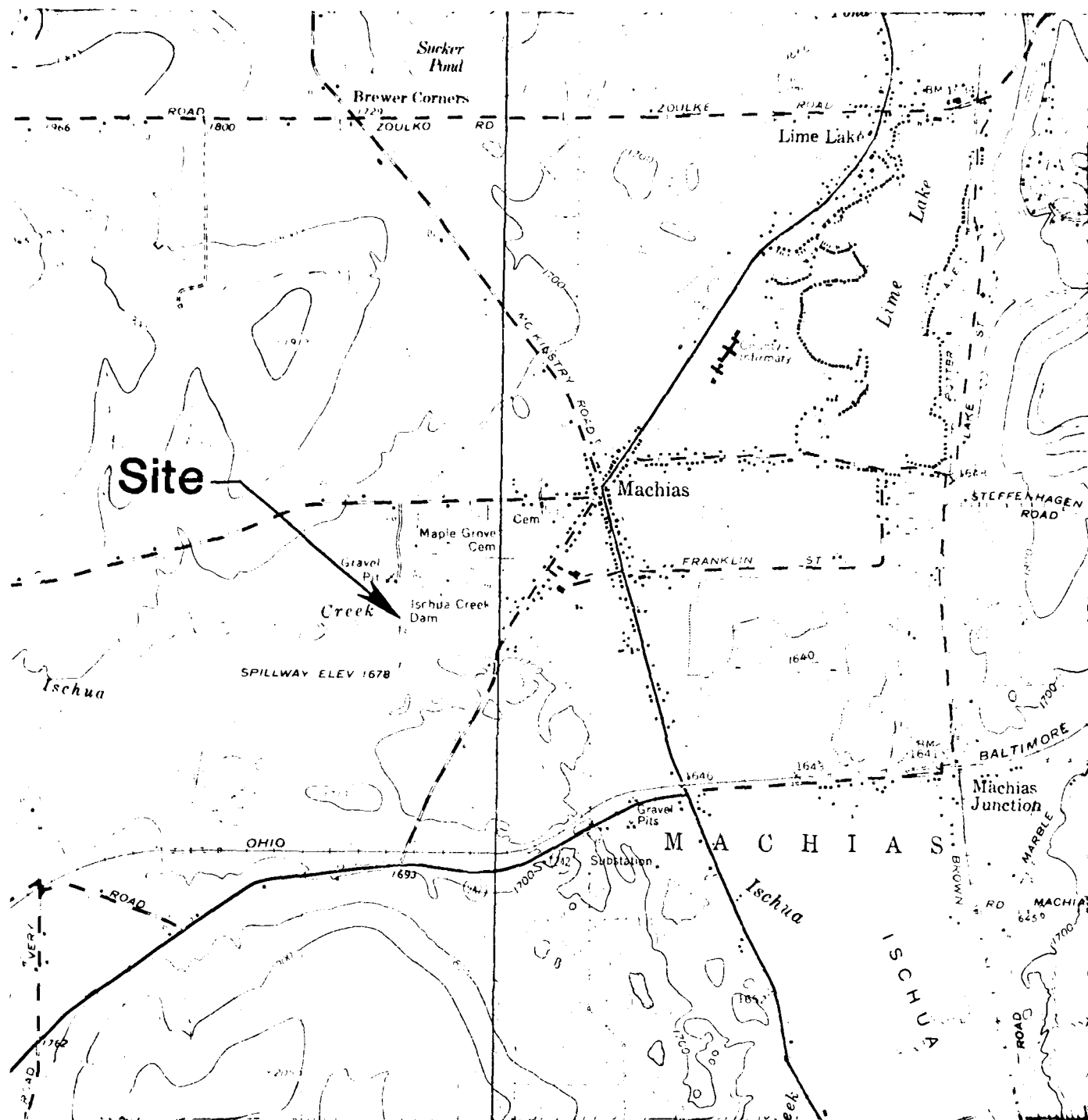
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18 Aug. 81

Ischua Creek Watershed
Dam No. 1



AERIAL VIEW



Ischua Creek Watershed Dam No. 1

LOCATION PLAN

Scale: 1"=2000'

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
ISCHUA CREEK WATERSHED DAM NO. 1

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the New York District Corps of Engineers in a letter dated 24 February 1981, in fulfillment of the requirements of the National Dam Inspection Act, Public Law 92-367, dated 2 August 1972.

b. Purpose of Inspection

This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF THE PROJECT

a. Location

The Ischua Creek Watershed Dam No. 1 is located on Ischua Creek approximately 5.5 miles northeast of Franklinville, New York. It can be reached from Felton Hill Road which intersects State Route 16 in Machias, New York. The dam is shown on U.S.G.S. West Valley, New York quadrangle with coordinates approximately at N 42° 24' 45", W 78° 30' 35" (see location plan). Page B5 of Appendix B is a site plan for this dam.

b. Description of Dam and Appurtenances

The dam consists of a zoned earthfill embankment with an earthfill cutoff trench below; a principal spillway with a reinforced concrete riser structure and outlet pipe; and two vegetated earth channel emergency spillways located to the north and south of the dam embankment. The length of the dam embankment is approximately 490 ft. The length of the dike is approximately 1300 ft. The two emergency spillways total 500 ft. in weir length.

1) Dam Embankment

The embankment appears to be made up of a central core of semi-pervious silty sand and gravel, with shells of sand and gravel. Specific materials could not be read on the available drawings. It is approximately 490 ft. long and a maximum of 27 ft. high.

The upstream slope is 3 horizontal to 1 vertical and the downstream slope is 2.5 horizontal to 1 vertical. The crest width is 14 ft.

Beneath the embankment is an earthfill cutoff trench of variable width at the bottom. According to available plans, it is constructed of the same material as the semi-pervious core.

The dam is founded on silty sand and gravel (designated GM using the Unified Soil Classification System).

2) Dike

The dike is similar in construction to the dam embankment with the exception of a berm on the upstream slope at the approximate elevation of the high level inlet. The purpose of this berm is unclear. It is not shown on the available cross section drawings. It may be for wave erosion protection during flood periods.

Beneath the dike is an earthfill cutoff trench approximately 12 feet wide at the bottom. Design drawings show this trench extending into sand or silty gravel layers.

3) North Emergency Spillway

The north emergency spillway is constructed of compacted fill with diversion berms on both sides of the channel. The grass covered channel curves around the north end of the dam embankment between the dam and the dike.

The control section is 200 ft. wide and 30 ft. long and is at elevation 1678.3 ft. (MSL). The channel downstream of the control section is approximately 500 ft. long.

The side slopes are 3 horizontal to 1 vertical and are grass covered.

4) South Emergency Spillway

The south emergency spillway is cut into sand and gravel in the south abutment. Diversion berms of compacted fill have been constructed on both sides with side slopes of 3 horizontal to 1 vertical. The grass covered channel curves around the south end of the dam embankment.

The control section is 300 ft. wide and 30 ft. long and the downstream channel is roughly 400 ft. long.

5) Principal Spillway

The principal spillway consists of a reinforced concrete drop inlet structure with two uncontrolled orifice inlets, a 54 in. diameter water pipe supported on a concrete cradle and a reinforced concrete impact basin and baffle.

The inside dimensions of the riser structure are 14.6 ft. high and 13.5 ft. wide normal to the axis of the dam. It is 4.5 ft. long parallel to the embankment and flares to 18.5 ft. long at the top. The walls of the structure are 15 in. thick. The structure is founded on a 15 ft. by 20 ft. spread footing. The "low stage inlet" is an uncontrolled opening located at the base of the structure. It is 30 in. in diameter and is located in the upstream face of the riser structure. The water flows through this orifice directly into the water pipe. It is protected by inclined trash rack assembly. This assembly is fabricated from galvanized steel angle sections.

The "high stage inlet" consists of two openings approximately 12.7 ft. above the invert of the riser structure. They are 13.5 ft. wide and 14 in. high and are located in the left and right sides of the flared portion of the riser structure. They are protected by four galvanized steel pipes placed in the sloping section below each opening. A 30 in. diameter manhole permits access into the riser structure.

The riser structure is drained by a 54 in. diameter reinforced concrete pressure pipe. It is approximately 124 ft. long and drops approximately 1.25 ft. over that length. The pipe penetrates the downstream side of the riser structure and is supported by a 14 in. thick concrete cradle within the embankment. Plans indicate 4 concrete anti-seep collars cast around the pipe within the embankment.

The downstream end of the pipe penetrates the reinforced concrete impact basin. The inside dimensions of the impact basin are 23.3 ft. wide normal to the axis of the dam and 14.3 ft. long parallel to the embankment. It is 12.7 ft. high at the upstream face and tapers to 7.3 ft. at the downstream end. At the downstream side there is a cutoff wall extending 2 ft. beneath the floor of the impact basin and there are two wingwalls extending 6 ft. beyond the walk of the basin parallel to the embankment. There is a 1 ft. thick by 7.3 ft. high baffle spanning between the walls of the impact basin.

6) Foundation and Embankment Drainage

Vertical seepage drains with graded filters are located in the downstream foundation at approximately 44 ft. downstream of the centerline of the dam and 30 ft. downstream of the centerline of the dike. In the dike, it extends from approximately 350 ft. south of the north abutment to approximately 470 ft. north of the south abutment. In the dam it extends the full length of the embankment. The drain is approximately 8 ft. wide and variable depth in the dike. In the dam a blanket drain extends under the downstream slope to the toe of the embankment. For 300 ft. to the north of the principal spillway the drain includes a system of 6 and 12 in. diameter pipe which outlets to the north and about 30 ft. downstream of the impact basin.

The drain in the dam contains a system of 6 in. and 12 in. diameter bituminous coated corrugated metal perforated pipe which outlets downstream of the impact basin in the left bank of the outlet channel.

A blanket drain extends downstream of the seepage drain to a cobble drain at the toe of both embankments.

c. Size Classification

The dam's maximum impoundment of 3677 acre-ft. places it in the INTERMEDIATE size category according to the Corps of Engineers Recommended Guidelines.

d. Hazard Classification

The hazard potential classification for this dam is HIGH because of the significant economic losses and high potential for loss of life downstream in the event of dam failure. Section 5 of this report presents more detailed discussion of the hazard potential.

e. Ownership

The dam is owned and operated by:

Cattaraugus County
James M. Cash, Chairman of Oversight Committee
RD #2
Maple Grove Road
Franklinville, New York 14737
Tele: (716) 767-3604

f. Purpose of Dam

The purpose of this dam is to reduce downstream flooding by providing temporary storage for the runoff from 8,384 acres. The temporary storage is released gradually through the two-stage principal spillway system.

g. Design and Construction History

The dam was built under the Watershed Protection and Flood Prevention Act by the Ischua Creek County Small Watershed Protection District with the assistance of the Soil Conservation Service. It was completed in 1964.

h. Normal Operating Procedures

The dam is normally self-regulating.

1.3 Pertinent Data

a. Drainage Area

The drainage area for this dam covers 13.1 square miles. It is made up primarily of rolling pasture and woodland and minor development.

b. Discharge at Dam Site

1) Outlet Works

Normal discharge at the site is through the 54 in. diameter outlet pipe. In the event of severe flooding, water would flow over the emergency spillway at elevation 1678.3 ft. (MSL). The invert of the low stage orifice is at elevation 1659.5 ft. (MSL). The invert of the high stage orifice is at elevation 1672.2 ft. (MSL)

2) Maximum Known Flood

There is no data available for the maximum known flood at dam site. Evidence of recent high water was observed at elevation 1661.5 ft. (MSL).

3) Ungated Spillway Capacity at Top of Dam

The capacity of the principal spillway with the reservoir at top of dam elevation (1682.3 ft MSL) is 535 cfs. The capacity of the emergency spillway is 12,600 cfs at this level.

4) Ungated Spillway Capacity at Test Flood

The capacity of the principal spillway with the reservoir at test flood elevation (1682.2 ft. MSL) is 532 cfs. The capacity of the emergency spillway is 12,282 cfs at this level.

5) Gated Spillway Capacity at Normal Pool

There are no gated spillways.

6) Gated Spillway Capacity at Test Flood

As previously mentioned, there are no gated spillways.

7) Total Spillway Capacity at Test Flood

The total spillway capacity at test flood elevation (1682.2 ft. MSL) is 12,814 cfs.

c. Elevation (ft. above NGVD)

- 1) Streambed at toe of dam: 1655.3
- 2) Bottom of cutoff: variable, approximately 1650 minimum
- 3) Maximum tailwater - unknown, outlet conduit invert 1658.3
- 4) Normal pool: 1659.5
- 5) Full flood control pool: 1678.3
- 6) Spillway crest - Low level orifice: 1659.5
High level orifice: 1672.2
Emergency spillways: 1678.3
- 7) Design surcharge (original Design): 1678.3
- 8) Top of Dam: 1682.3
- 9) Test flood surcharge: 1682.2

d. Reservoir (Length in feet)

- 1) Length of maximum pool: 6000[±] ft.
- 2) Length of normal pool: 0[±] ft.
- 3) Length of flood control pool: 5500[±] ft.

e. Storage (acre-feet)

- 1) Normal pool: 0
- 2) Flood control pool: 2347
- 3) Spillway crest pool:
 - a) Low stage inlet: 0
 - b) High stage inlet: 962
 - c) Emergency spillway: 2347

- 4) Top of dam: 3677
- 5) Test flood pool: 3619

f. Reservoir Surface (acres)

- 1) Normal pool: 0
- 2) Flood control pool: 280
- 3) Spillway crest pool
 - a) Low stage inlet: 0
 - b) High stage inlet: 167
 - c) Emergency spillway: 280
- 4) Test flood: 338
- 5) Top of dam: 347

g. Dam

- 1) Type: Earth Embankment
- 2) Length: 490 ft.
- 3) Height: 27 ft.
- 4) Top Width: 14 ft.
- 5) Side Slopes:
 - Upstream: 3H:1V
 - Downstream: 2.5H:1V
- 6) Zoning: Semi-pervious core surrounded by sand and gravel shells, seepage drain under 70% of downstream embankment.
- 7) Impervious Core: Semi-pervious silty sand and gravel
- 8) Cutoff: Variable width, earthfill
- 9) Grout Curtain: None

h. Dike

- 1) Type: Earth Embankment
- 2) Length: Approximately 1300 ft.
- 3) Height: Approximately 22 ft. maximum
- 4) Top Width: 14 ft.
- 5) Side Slopes:
 - Upstream: 3H:1V
 - Downstream: 2.5H:1V
- 6) Zoning: Semi-pervious core surrounded by sand and gravel shells, seepage drain under 80% of downstream embankment.
- 7) Impervious Core: Semi-pervious silty sand and gravel
- 8) Cutoff: 12 ft. bottom width, earthfill
- 9) Grout Curtain: None

i. Diversion and Regulating Tunnel

Not applicable

j. Spillways

1) Type:

- a) Principal Spillway: Reinforced concrete drop inlet
- b) North Emergency Spillway: Grass covered earth channel constructed of compacted earthfill at the north end of the main dam
- c) South Emergency Spillway: Grass covered earth channel cut in south abutment

2) Length of Weir:

- a) Low Level Orifice: 30 in. dia pipe
- b) High Level Orifice: 27 ft.
- c) North Emergency Spillway: 200 ft.
- d) South Emergency Spillway: 300 ft.

3) Crest Elevation: (feet above NGVD)

- a) Low Level Orifice: 1655.3
- b) High Level Orifice: 1672.2
- c) North Emergency Spillway: 1678.3
- d) South Emergency Spillway: 1678.3

4) Gates: None

5) Upstream Channel: Ischua Creek, narrow stream to reservoir through farm and woodland

6) Downstream Channel: Ischua Creek, narrow stream through farm and woodland

k. Regulating Outlet: None

SECTION 2 - ENGINEERING DATA

2.1 GEOLOGY

Bedrock at the dam site is Upper Devonian Age (345-375 million years ago) interbedded shale and siltstone of the Canadaway Group. This flat-lying sedimentary rock is relatively underformed. Regionally, the bedrock forms a homocline dipping approximately 40 feet per mile. Small terraces and low folds locally modify this dip to essentially flat-lying over short distances. Only minor folding and faulting are found in the region with no major or active faults known to exist in the area.

The Ischua Creek Watershed Dam No. 1 is in a region classified as Zone 2 seismicity, as shown on Figure No. 1 of the Recommended Guidelines for Safety Inspection of Dams.

Pleistocene Glaciation (beginning approximately 2 million years ago) has modified topography by means of erosion and deposition. The thick continental ice sheet advanced southward from Quebec and Ontario smoothing terrain by glacial scour and mantling uplands with till deposits. The pleistocene geology of the dam site is that of glacial outwash deposits. Generally coarse sands and gravels were deposited by strongly aggrading streams flowing from former ice sheets. Typically, a veneer of dense glacial till under the gravel and sands is also common to the area. In recent times, alluvial silts and sands from upslope erosion areas have been deposited on the glacial materials.

2.2 SUBSURFACE INVESTIGATION

Test hole logs are contained in the "As-Built" drawings; however, the copies are illegible and are not included in Appendix B.

2.3 DESIGN RECORDS

The records available for the project consists of 14 contract drawings which show the plans, sections and details of the dam, appurtenant structures, impact basin details and grating, fencing details, and logs of test holes, and a design report issued by the U.S. Soil Conservation Service dated April 19, 1963.

2.4 CONSTRUCTION RECORDS

Construction records and specifications are available at the U.S. Soil Conservation Service, Design Section, Syracuse, N.Y.

The sedimentation basin structure shown on Page 2 of the "As-Built" drawings was not found during the visual inspection.

2.5 OPERATION RECORDS

No written maintenance or operation records exist for the dam

2.6 EVALUATION OF DATA

Information obtained from the "As-Built" drawings is consistent with observations made during this inspection. The information obtained from available data was considered adequate for the Phase I inspection and evaluation.

SECTION 3 - VISUAL INSPECTION

3.1 Findings

a. General

The Ischua Creek Watershed Dam No. 1 is in good condition at the present time.

b. Dam

1) Earth Embankment (See Photos 1, 5, 7 and 8)

The brush growth is heavy on this embankment impeding inspection of the slopes. Shrubs were noted along the north upstream abutment contact and small trees are growing just to the north of the intake structure on the upstream slope and along the cobble drain at the north downstream toe.

Erosion gullies 24 in. wide and 6 in. deep were noted in the north downstream abutment contact and smaller (12 in) gullies were found at the south downstream contact and approximately 30 ft. north of the impact basin structure. Erosion gullies were also noted around the wing walls of the outlet structure.

The crest of the dam is rutted up to 2 to 4 in. deep by vehicular and horse traffic and evidence of campfires was noted at the south end.

There is no slope protection on the upstream slope other than the vegetative cover. Approximately 1 to 2 inches of erosion due to wave action was noted at the water line on the upstream slope.

The toe drain under the north downstream slope appears to be functioning properly as no seepage was noted at the dam. The outlet pipe for the drain was partially submerged at the time of the inspection and any discharge could not be distinguished from the stream flow. No staining was observed at the outlet pipe.

2) North Dike (See Photo 7)

The dike is covered with a heavy mat of grass and brush. Shrubs or small trees were noted growing on the upstream and downstream slopes at the bend in the dike, and on the upstream slope at the south end of the dike.

Wet areas were noted along the downstream toe along much of the dike. The elevation of these areas is above that of the reservoir. Therefore, the areas are the result of natural groundwater and the recent spring thaw. The small eddy current type erosion gullies were noted in these areas but no visible flow was noted during the inspection.

Two 6 in. diameter rodent holes were found approximately 250 ft. and 300 ft. from the north abutment at mid height of the upstream slope and the crest is rutted up to 4 in. deep by vehicular and horse traffic.

3) North Emergency Spillway

This spillway is in good condition with the exception of three 6 in. diameter rodent holes in the north slope downstream of the control section. There are also 3 ruts across the channel from motor-cycle and horse traffic. These ruts are up to 4 in. deep and 18 in. wide.

4) South Emergency Spillway (See photos 5 and 6)

This spillway is in good condition with the exception of three 6 in. diameter rodent holes in the south slope approximately at the control section of the spillway channel. Some wet areas were noted but they are the result of natural groundwater or ponded runoff.

c. Appurtenant Structures

1) Drop Inlet Service Spillway (See photos 1 and 2)

The structure is in good condition with no evidence of spalling, cracking, or efflorescence. The trash racks are in good condition, although a minor amount of debris was lodged in the low level trash rack.

2) Impact Basin

The structure is in good condition. Minor spalling was observed on the concrete baffle. Minor erosion behind both wingwalls were noted. There is a 5' x 14'1" opening between the inlet wall and baffle that presents a potential hazard to people.

d. Reservoir Area

The shore of the reservoir is generally shallow sloping pasture or woodland. It appears to be stable and in good condition.

e. Downstream Channel (See photo 3)

The downstream channel is a narrow channel passing over relatively flat flood plain. There is rip rap protection of the plunge pool, but erosion of the banks has taken place above the level of the eroded up to 300 feet downstream of the outlet.

3.2 Evaluation

The dam is generally in good condition. The potential problems noted during the visual inspection are listed below.

- a) Drainage gullies and tire ruts on the main dam, north dike and left emergency spillway.
- b) Animal burrows on north dike and both emergency spillways.
- c) Debris on upstream slope and in the low level trash rack of the intake structure.
- d) Erosion of the downstream channel and the upstream slope of the dam at the waterline.
- e) Trees growing on the north dike and the main dam embankment.
- f) The opening between the inlet wall and baffle of the impact basin.

SECTION 4 - OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

No written operation and maintenance procedures exist for the project. The normal operation of the project consists of allowing water to flow through the service spillway outlet pipe.

4.2 MAINTENANCE OF DAM

Maintenance of the dam is performed when the need arises. Maintenance is not considered adequate as evidenced by trees and brush, animal burrows, etc.

4.3 WARNING SYSTEM IN EFFECT

No warning system is in effect or in preparation.

4.4 EVALUATION

The overall condition of the dam and appurtenant structures appears to be good. Recommendations in connection with regular maintenance are discussed in Section 7.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 Drainage Area Characteristics

Ischua Creek Watershed Dam No. 1 is located on Ischua Creek, a tributary of Olean Creek in the Allegheny River basin, and has a drainage area of 13.1 square miles. The dam is situated approximately 5.5 miles northwest of Franklinville, New York, and 0.5 miles southwest of Machias, New York. The topography of the watershed is gentle rolling hills.

5.2 Design Data

This dam was designed as a Class C structure in accordance with criteria established in Washington Engineering Memorandum SCS-27. Under this classification, the emergency spillway is designed for a rainfall equal to $P(100) + 0.26[PMP - P(100)]$, while the freeboard pool is designed for the PMP rainfall.

The Soil Conservation Service (SCS) design calculations have been reviewed. The dam was designed to pass the 10-year flood with antecedent moisture condition III plus snowmelt without discharging through the emergency spillway. The peak outflow is 416 cfs and the peak elevation is 1678.3 ft. (MSL). The dam was also designed to contain the runoff for the 100-year flood without discharging through the emergency spillway. The SCS design allowed for a 50-year sediment accumulation with a storage of 29 acre-ft. The principal spillway consists of a 54 in. diameter reinforced concrete water pipe and a 4.5 ft. x 13.5 ft. reinforced concrete riser with two 13.5 ft. x 14 in. openings. The riser has a 30 in. diameter orifice with invert elevation of 1659.5 ft. (MSL). The north and south emergency spillway control cross sections are 200 feet and 300 feet wide, respectively, with side slopes of 3 horizontal to 1 vertical and a crest elevation of 1678.3 ft. (MSL). The dam crest elevation is 1682.3 ft. (MSL).

5.3 Analysis Criteria

The analysis of the spillway capacity of the dam and the storage of the reservoir was performed using the Corps of Engineers HEC-1 Dam Safety Version computer model. The unit hydrograph was defined by the Snyder Synthetic Unit Hydrograph method, and the Modified Puls routing procedure was incorporated. The Probable Maximum Precipitation (PMP) was 22.4 in. (24 hours 200 sq. miles) from Hydrometeorological Report #33 in accordance with the Recommended Guidelines of the Corps of Engineers. The dam is 27 feet high and impounds approximately 3677 acre feet at the top of the dam. The dam is classified as a HIGH hazard and INTERMEDIATE in size, according to the Recommended Guidelines of the Corps of Engineers. The spillway design flood is the Probable Maximum Flood (PMF). The floods selected for analysis were 20, 40, 50, 60, 80, and 100% of the PMF flows. The PMF inflow of 13,563 cfs was routed through the reservoir and the peak outflow was determined to be 12,814 cfs. The peak PMF outflow would produce an eroding velocity of 9.4 ft/sec on the emergency spillways.

5.4 Reservoir Capacity

The reservoir capacities at the crest of the emergency spillway and at the top of the dam are 2347 acre-ft. and 3677 acre-ft, respectively. Surcharge storage between the emergency spillway crest and the top of dam is equivalent to 1.9 in. of runoff from the drainage area.

5.5 Experience Data

There are no flood records for the dam site, however, during the field investigation, evidence of recent high water was observed at elevation 1674.1 ft. (MSL). This reservoir elevation corresponds to a peak outflow of 264 cfs.

5.6 Overtopping Potential

The maximum capacity of the spillways is 13,135 cfs which is greater than the PMF peak outflow of 12,814 cfs. The dam is not overtopped by the PMF, the peak elevation being 0.1 feet below the top of the dam.

5.7 Analysis of Downstream Impacts

During the field investigation, dwellings and highways located downstream of the dam were identified and referenced to the channel invert. The cross section locations used in the downstream channel routing are shown on Page D-2 Appendix D. The impacts of the PMF on dwellings located downstream of the dam are shown in Table 5.1. For the purposes of this analysis, a danger of loss of life was assumed to exist if the computed PMF water surface was above the first floor elevation of a structure. This situation occurs at two structures (Locations 1 and 2). The road crossings at locations 1, 2, and 3 are all overtopped during the PMF.

5.8 Evaluation

The spillway of Ischua Creek Watershed Dam No. 1 will safely pass the PMF without overtopping. The spillway is therefore assessed as "Adequate". Potential problems include:

- a) Erosion of the emergency spillway for the test flood conditions. Because of the low probability of occurrence of the PMF, and because there is no cost effective means of preventing the erosion, no preventative recommendations are deemed necessary.
- b) The danger of loss of life and economic damage downstream of the dam for the test flood conditions.

TABLE 5.1

SUMMARY OF DOWNSTREAM IMPACTS FOR PMF

Location # (see page D-2 Appendix D)	Location	# of Dwellings	Structure Height above Streambed* (ft)	Peak Flow (cfs)	Peak Stage (ft)	Comments
-	At Dam	-	-	12,814	-	-
1	Road crossing 1600' d/s of dam	1	8	12,813	11	Danger of loss of life. Road over- topped.
2	Rt NY16 crossing	2 1	12 8	12,823	10	Danger of loss of life. Road over- topped.
3	Road crossing 1900' d/s of Rt NY16	9	17	12,821	10	Road overtopped
4	1700' d/s of Location 3	1	20	12,816	8	-

*The structure height above the streambed is the elevation of the first floor above the channel invert.

SECTION 6 - STRUCTURAL STABILITY

6.1 Visual Observations

There does not appear to be significant displacement or distress associated with the embankments at this site. The dam appears to be in good condition at the present time.

6.2 Design and Construction Data

Analyses carried out during the design and construction phase included a slope stability analysis under full drawdown conditions by a modified Swedish circle method. The soil parameters assumed were:

Core: $\phi = 20.5^\circ$, $c = 200$ psf, 1.5:1 slope

Shells: $\phi = 35.0^\circ$, $c = 0$, 3:1 slope U.S., 2.5:1 slope D.S.

The factors of safety calculated were 1.43 for the upstream slope and 1.68 for the downstream slope. Adding a 10 ft. wide berm to the upstream slope raised the factor of safety to 1.72. An analysis by the infinite slope method resulted in a factor of safety of 1.06 against a shallow failure of the upstream embankment shell. The calculated factors of safety are considered marginally adequate according to the recommended Phase I guidelines.

6.3 Post Construction Changes

There have been no known changes to any of the embankments or structures at this dam.

6.4 Seismic Stability

The dam is located in Seismic Zone No. 2 and, in accordance with the recommended Phase 1 guidelines, a seismic stability analysis is not warranted.

SECTION 7 - ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

Examination of the available documents and visual inspections of Ischua Creek Watershed Dam No. 1 and appurtenant structures did not reveal any conditions which constitute a hazard to human life or property. The earth embankment is considered to be stable under present conditions.

Using the Corps of Engineers screening criteria for review of spillway adequacy, it has been determined that the dam would not be overtopped for the full PMF. The principal and auxiliary spillway capacities are, therefore, judged as adequate.

b. Adequacy of Information

This report and its conclusions are based on visual inspection, interview data, contract drawings, and office hydrologic/hydraulic studies. This information and data are adequate for a Phase I inspection.

c. Need for Additional Investigations

No additional investigations are required for the project

d. Urgency

All remedial actions described below should be completed within one year of notification to the owner.

7.2 RECOMMENDED MEASURES

a. Remove the trees and saplings including the roots from the embankment slopes. Backfill the resulting voids with suitable compacted material.

b. Regrade and fill in the erosion gullies on the downstream slope and around the outlet structure. Reseed the disturbed areas.

c. Place a grate over the opening in the impact basin between the inlet wall and baffle.

d. The debris and vegetation should be cleared from the downstream channel, outlet basin, auxiliary spillway channel and embankment surfaces periodically. A program of periodic mowing and cutting of the embankment and outlet channels should be provided.

e. Provide a program of periodic inspection and maintenance of the dam and appurtenances. Document this information for future reference.

f. Develop a formal written downstream warning system to alert the appropriate officials and residents in the event of an emergency.

APPENDIX A
VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Ischua Creek Watershed Dam No. 1
Fed. I.D. # NY 00583 DEC Dam No. 19-3241
River Basin Allegheny
Location: Town Machias County Cattaraugus
Stream Name Ischua Creek
Tributary of Olean Creek
Latitude (N) 42° 24.8' Longitude (W) 78° 30.3'
Type of Dam Earth Embankment
Hazard Category High
Date(s) of Inspection April 2, 1981
Weather Conditions Sunny, windy 50°
Reservoir Level at Time of Inspection Approximately elevation 1661.5

b. Inspection Personnel Mr. Bob Farrell, Mr. Ken Avery, Mr. Jim Reynolds,
Mr. Jeff Hardin

c. Persons Contacted (including Address & Phone No.)
U.S Soil Conservation Service, Rm 771-Federal Bldg., So. Clinton St., Syracuse, N.Y.
State Construction Engineer: Philip "Skip" Nelson 1-315-423-5502
Area 1 Project Engr (Batavia): Pete Wright 1-716-343-3664
Contracting Officer for Ischua Creek Watershed: Ed Smith-Contacted through Pete Wright

d. History:

Date Constructed 1964 Date(s) Reconstructed _____
Designer U.S.D.A. Soil Conservation Service
Constructed by _____
Owner _____

) Embankment

a. Characteristics

- (1) Embankment Material Sand and Gravel. Specific details of core material could not be read from drawings
- (2) Cutoff Type Trench cut into natural ground, variable depth, generally 12 feet wide at bottom. Cut into silty sand and gravel
- (3) Impervious Core There is a core 12 feet thick shown on the construction drawings, the material could not be identified
- (4) Internal Drainage System Trench drain with 6" diameter. BCCM perforated pipe from STA. 23+00 to 26+00. Blanket drain downstream of trench.
- (5) Miscellaneous Side slopes 2.5H:1V downstream and 3H:1V upstream

b. Crest

- (1) Vertical Alignment Good
- (2) Horizontal Alignment Good
- (3) Surface Cracks None noted
- (4) Miscellaneous There are signs of campfires near the right abutment and the crest is rutted from vehicle traffic.

c. Upstream Slope

- (1) Slope (Estimate) (V:H) 1Vertical to 3 Horizontal
- (2) Undesirable Growth or Debris, Animal Burrows Brush and grass need regular mowing. Brush growing at left abutment contact and a tree approximately 20 feet high is about 10 feet left of the inlet structure. There is drift-wood and floating debris on the upstream slopes to approximately the level of the high level inlet.
- (3) Sloughing, Subsidence or Depressions None noted

1) Dike

a. Characteristics

- (1) Embankment Material Appears to be constructed of silty sand and gravel similar to the dam itself.
- (2) Cutoff Type Trench 12 feet wide at bottom, variable depth, material similar to core of main dam
- (3) Impervious Core Shown on plans but material was not identified.
- (4) Internal Drainage System Trench and blanket drains exiting to a cobble drain along the downstream toe
- (5) Miscellaneous

b. Crest

- (1) Vertical Alignment Good
- (2) Horizontal Alignment Good
- (3) Surface Cracks None noted
- (4) Miscellaneous Rutted due to vehicular traffic

c. Upstream Slope

- (1) Slope (Estimate) (V:H) 1 Vertical to 3 Horizontal
- (2) Undesirable Growth or Debris, Animal Burrows Two 6" diameter animal burrows at mid height, 280' to 300' from left abutment. Trees at bend and at right
- (3) Sloughing, Subsidence or Depressions None noted

(4) Slope Protection None provided other than grass. Small eddy current erosion gullies (1" x 1") were noted all along the upstream slope of the dike near the toe

(5) Surface Cracks or Movement at Toe None noted

d. Downstream Slope

(1) Slope (Estimate - V:H) 1 Vertical to 2.5 Horizontal

(2) Undesirable Growth or Debris, Animal Burrows Trees growing near toe at the bend in the dike.

(3) Sloughing, Subsidence, or Depressions None noted

(4) Surface Cracks or Movement at Toe None noted

(5) Seepage Wet areas were noted along the downstream toe but these were higher in elevation than the impoundment pool and therefore are the result of natural groundwater.

(6) External Drainage System (Ditches, Trenches, Blanket) Cobble drain along the downstream toe

(7) Condition Around Outlet Structure Not applicable

(8) Seepage Beyond Toe None noted

e. Abutments - Embankment Contact

(1) Erosion at Contact Small (1" x 1") eddy current gullies noted

(2) Seepage Along Contact None noted

4) Drainage System

- (a) Description of System Perforated pipe installed for approximately 300 ft. to the left of the principal spillway. System consists of 6" and 12" diameter bituminous coated corrugated metal pipe and daylights approximately 30 ft. downstream of the impact basin on the left bank of the outlet channel
- (b) Condition of System Good
- (c) Discharge from Drainage System Outlet was partially submerged at the time of inspection and discharge could not be observed.

5) Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, etc.) None installed

6) Reservoir

- a. Slopes Appears stable and in good condition
- b. Sedimentation Very minor accumulation
- c. Unusual Conditions Which Affect Dam None noted

7) Area Downstream of Dam

- a. Downstream Hazard (No. of homes, highways, etc) Refer to Table 5.1 for a summary of downstream dwellings and highways
- b. Seepage, unusual growth None noted
- c. Evidence of movement beyond toe of Dam None noted
- d. Conditions of Downstream Channel Generally fair, channel slopes eroded due to stream flow, rip rap placed is insufficient as evidenced by erosion behind it

7) Spillway(s) (including Discharge Conveyance Channel)

Principal Spillway: Drop inlet structure with outlet conduit to impact basin. Vegetated earth

emergency spillways: 300 ft. wide at south abutment, 200 ft. wide at north abutment.

a. General Good

b. Condition of Service Spillway Excellent

c. Condition of Auxiliary Spillway Generally good. North spillway (left) shows rutting and animal burrows, right shows animal burrows. The grass needs mowing.

d. Condition of Discharge Conveyance Channel Channel banks eroded up to 300 ft. downstream.

8) Reservoir Drain/Outlet NONE

Type: Pipe _____ Conduit _____ Other _____

Material: Concrete _____ Metal _____ Other _____

Size: _____ Length _____

Invert Elevations: Entrance _____ Exit _____

Physical Condition (Describe): _____ Unobservable _____

Material: _____

Joints: _____ Alignment _____

Structural Integrity: _____

Hydraulic Capability: _____

Means of Control: Gate _____ Valve _____ Uncontrolled _____

Operation: Operable _____ Inoperable _____ Other _____

Present Condition (Describe): _____

9) Structural

- a. Concrete Surfaces _____ N/A

- b. Structural Cracking _____ N/A

- c. Movement - Horizontal & Vertical Alignment (Settlement) _____ N/A

- d. Junctions with Abutments or Embankments _____ N/A

- e. Drains - Foundation, Joint, Face _____ N/A

- f. Water Passages, Conduits, Sluices _____ N/A

- g. Seepage or Leakage _____ N/A

- h. Joints - Construction, etc. _____ N/A

- i. Foundation _____ N/A

- j. Abutments _____ N/A

- k. Control Gates _____ N/A

- l. Approach & Outlet Channels _____ N/A

m. Energy Dissipators (Plunge Pool, etc) _____ N/A

n. Intake Structures _____ N/A

o. Stability _____ N/A

p. Miscellaneous _____ N/A

10) Appurtenant Structures (Power House, Lock, Gatchouse, Other)

a. Description and Condition _____ None

APPENDIX B

ENGINEERING DATA

APPENDIX B

<u>TITLE</u>	<u>PAGE</u>
Cover Sheet	B-2
Plan of Storage Areas	B-3
Clearing Traverses	B-4
Plan of Damsite	B-5
Profiles	B-6
Profiles	B-7
Seepage Drain Details	B-8
Layout of Filter Drainage Pipes	B-9
Plan - Profile of Principal Spillway	B-10
Riser Details	B-11
Collar-Cradle-Trash Racks & Misc. Details	B-12
Impact Basin Details	B-13

ISCHUA

FL

CRAM

FLOOD

TO AREA

WATER

LEVEL

WIDE

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ISCHUA CREEK WATERSHED PROJECT

FLOODWATER RETARDING DAM NO. 1

583

DRAINAGE AREA	8884	Acres
FLOOD STORAGE	2347	Ac ft
TO EMERGENCY FLOODWAY CREST	.	
WATER SURFACE AREA	280	Acres
TO FLOODWAY CREST		
HEIGHT OF DAM	18	Feet
VOLUME OF FILL	66,950	Cubic Yards

BUILT UNDER THE WATERSHED PROTECTION AND
FLOOD PREVENTION ACT

by

ISCHUA CREEK COUNTY SMALL WATERSHED PROTECTION DISTRICT

with the assistance of

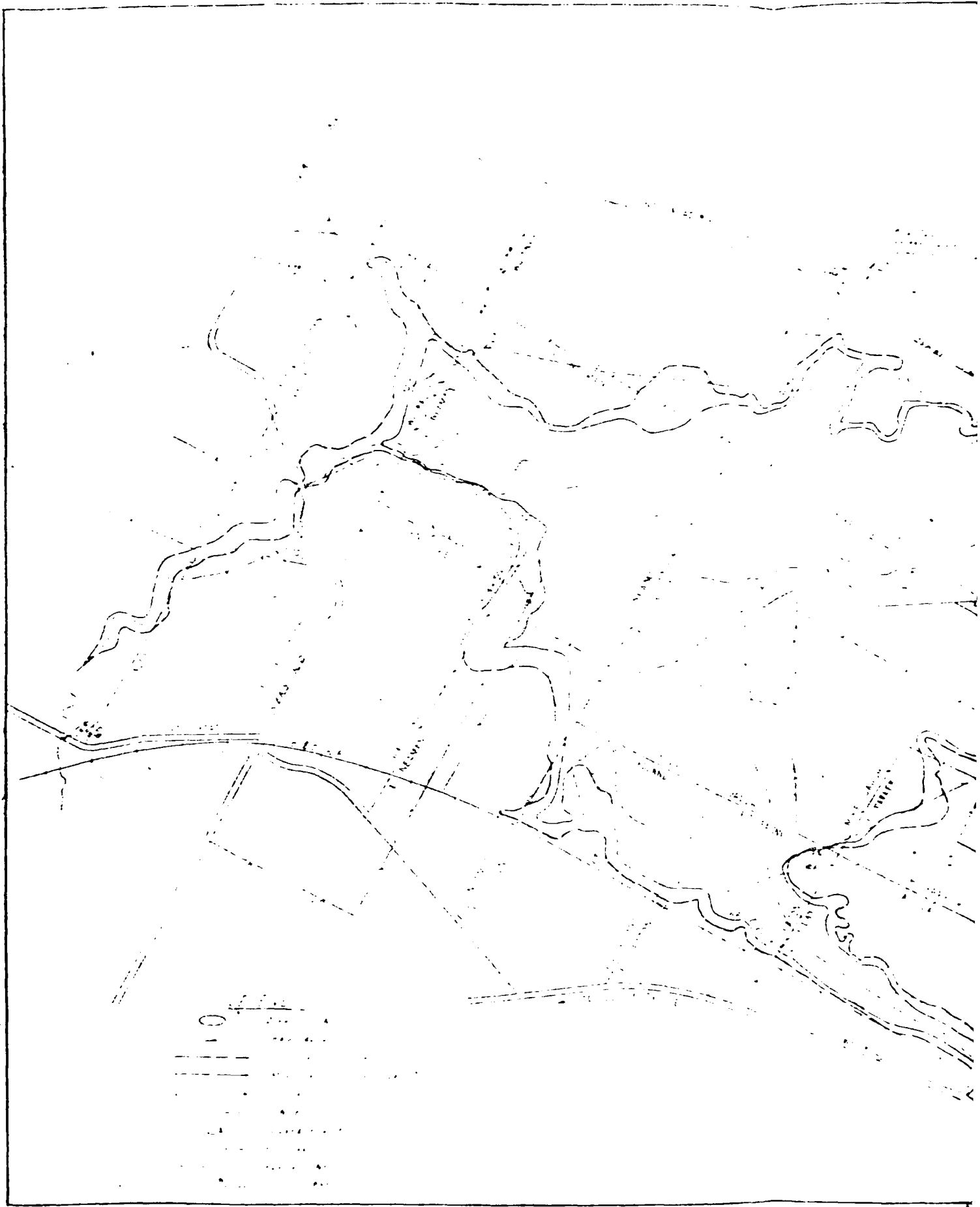
FLOOD CONTROL SERVICE

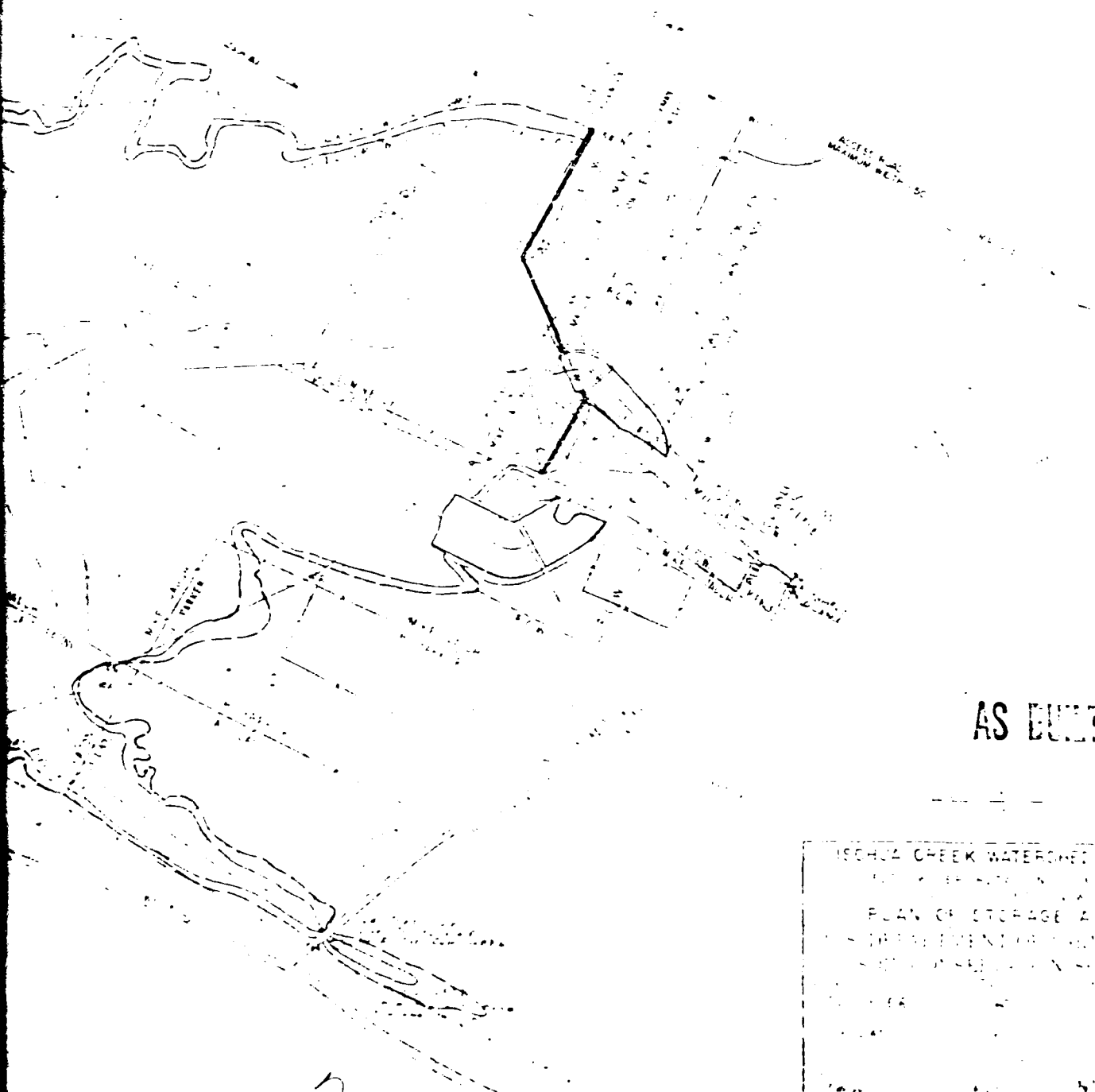
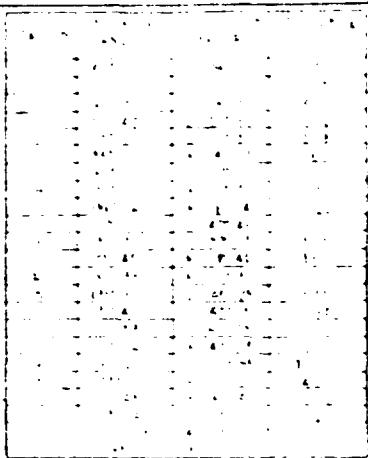
of the

U.S. DEPARTMENT OF AGRICULTURE

803

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ISCHIA CREEK WATERSHED PROJECT

PLAN OF STORAGE AREA

1:10,000

1964

1965

1966

1967

1968

2

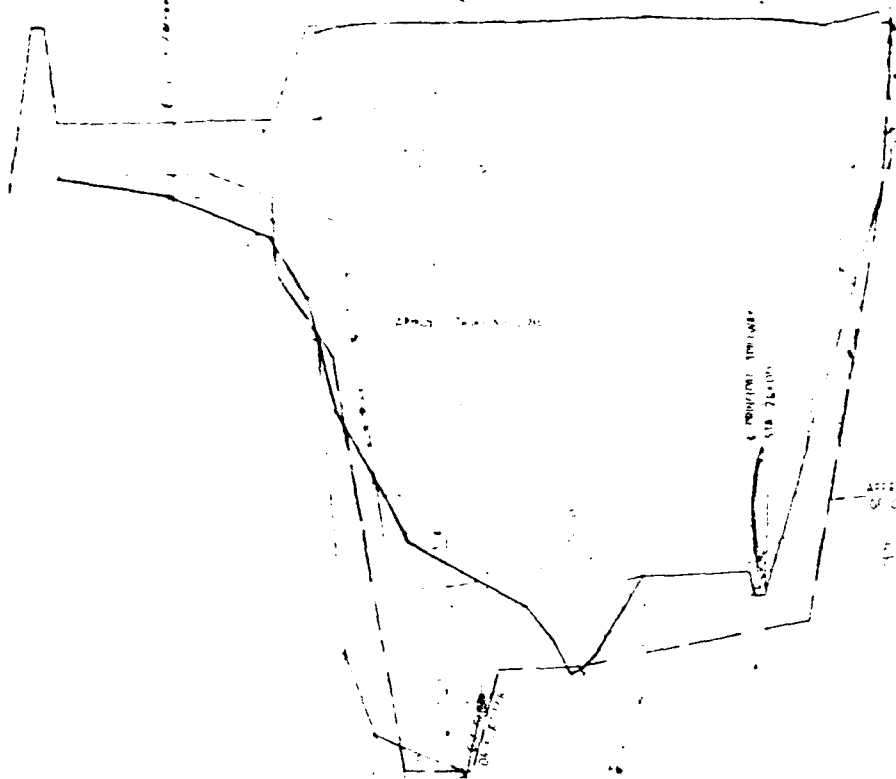




	PC	C	
30	20	50	90 00
10	20	50	10 00
10	20	50	27 00
10	20	50	30 00
10	20	50	30 45

1. *What is the purpose of the study?*
 2. *What are the research questions?*
 3. *What is the significance of the study?*
 4. *What are the limitations of the study?*
 5. *What are the conclusions of the study?*

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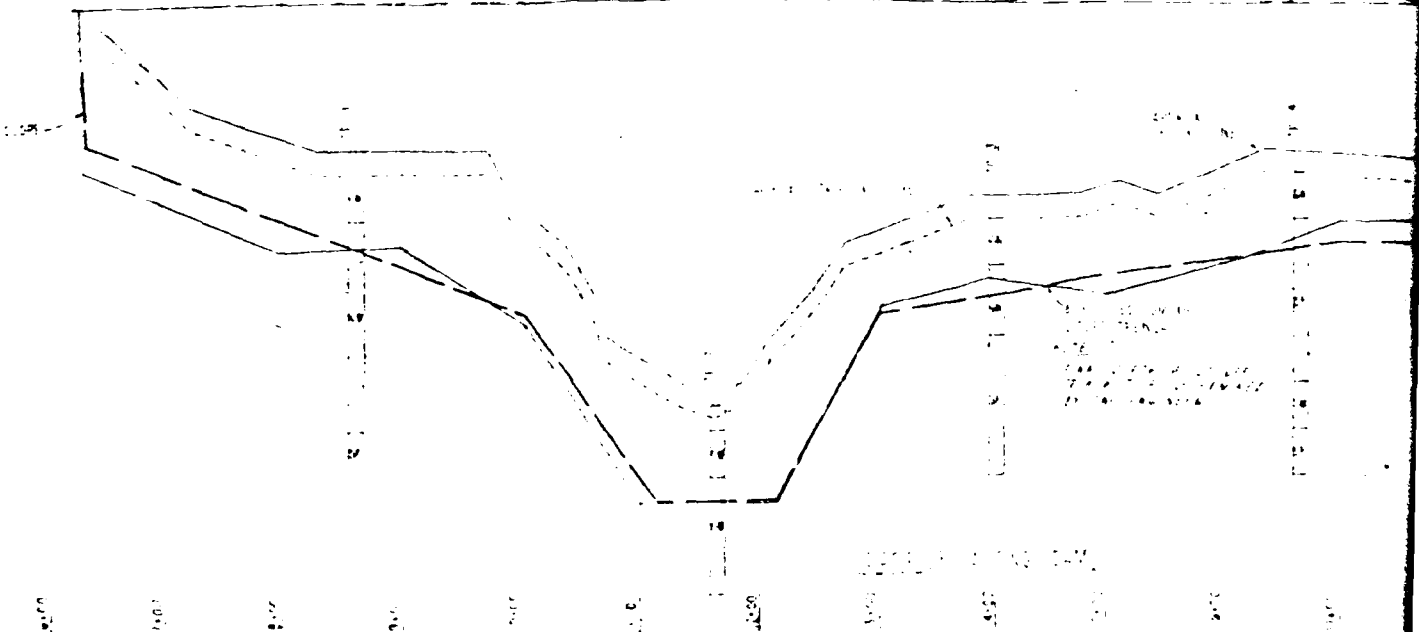


APPROXIMATE
LOCATION OF CAMP

NOTE: DISTANCE OF 10 MILES
FROM INTERSECTION OF THE RIVER

CONTOUR LINE

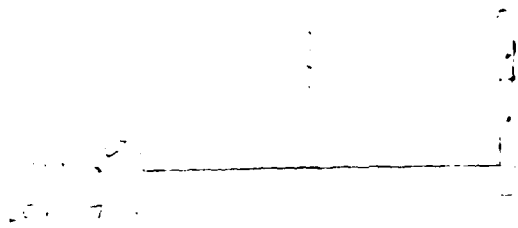
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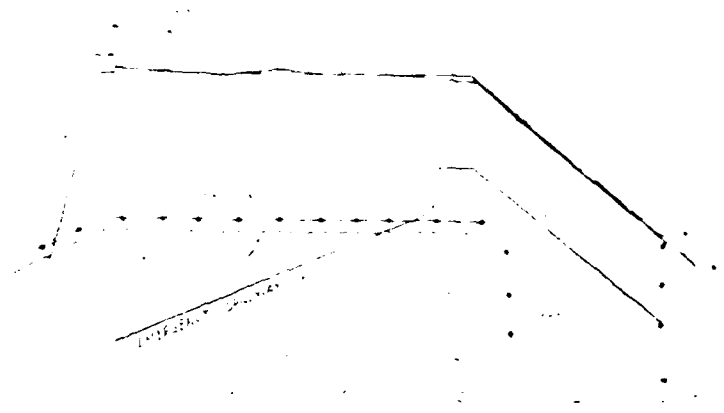
NOTE: DISTANCE OF 10 MILES
FROM INTERSECTION OF THE RIVER

CONTOUR LINE

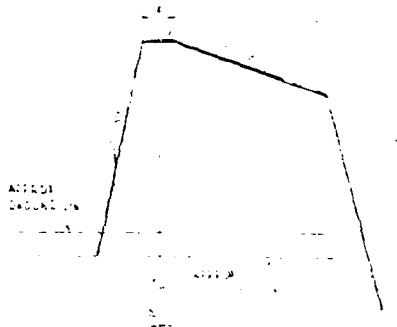
1200



PROPOSED GRADE OF ROAD

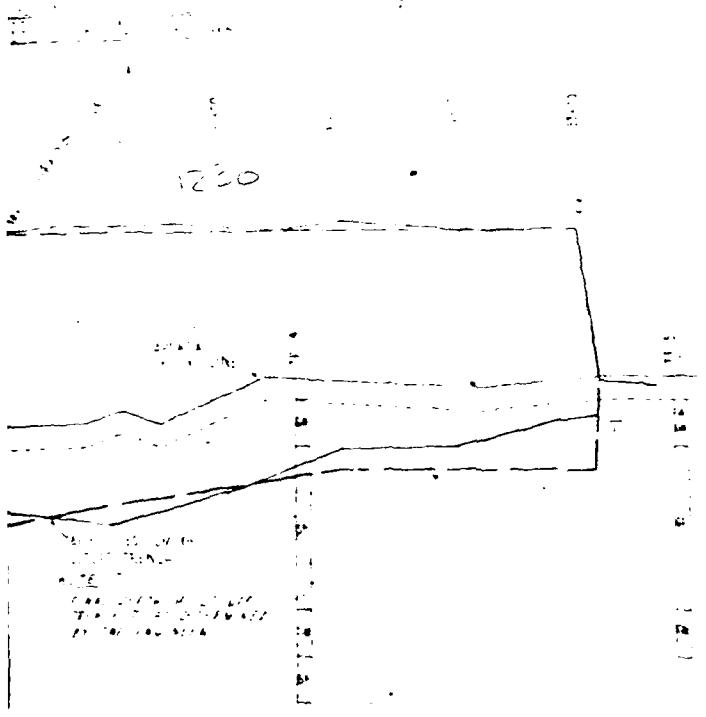


PROPOSED GRADE



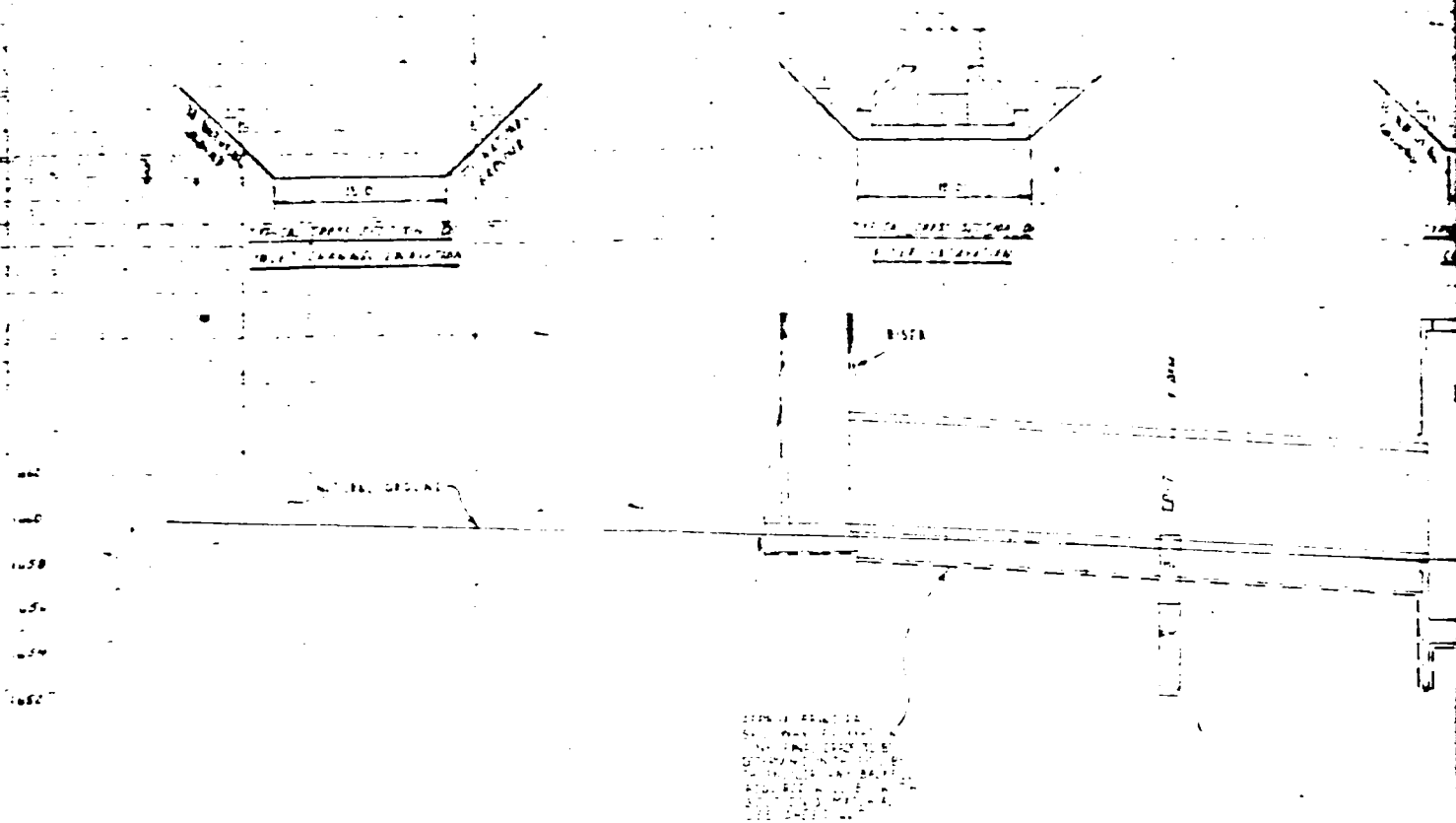
PROPOSED GRADE OF ROAD

EXISTING GRADE

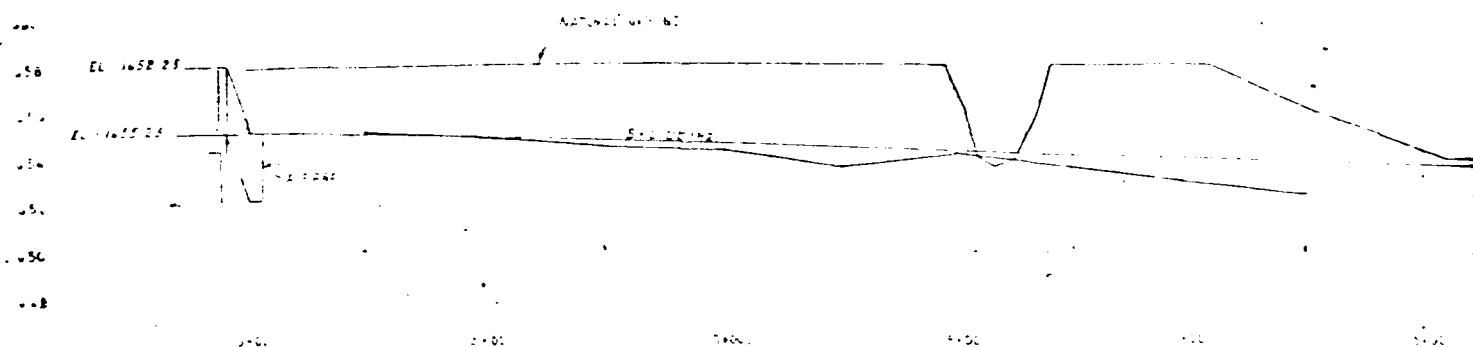


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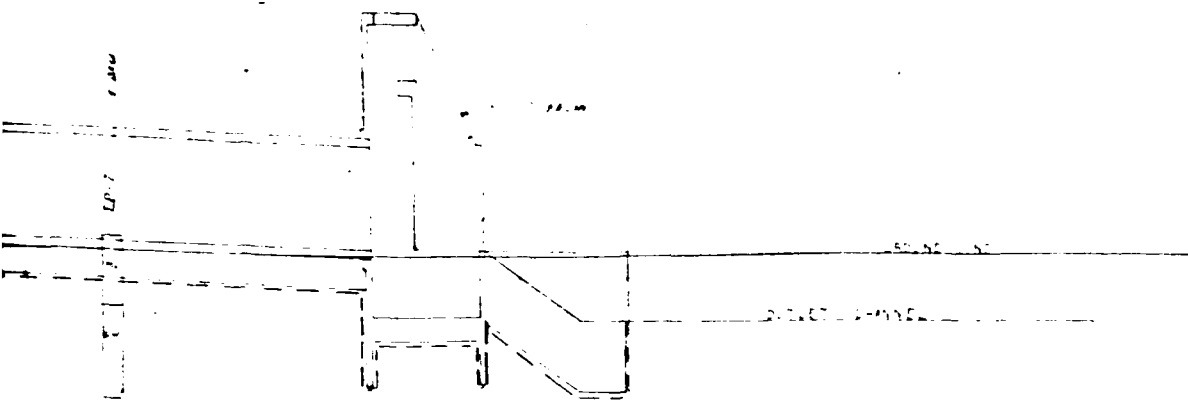
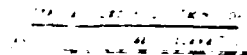
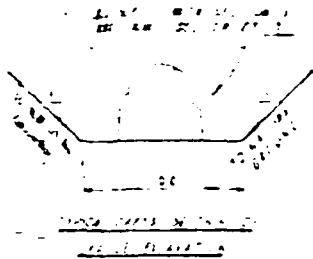
ISCHUA CREEK WATERSHED PROJECT
 WATER RESOURCES DIVISION
 FORTY-THIRD AVENUE, NEW YORK
 N. Y. 10018
 PROFILES
 U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 J. C. [unclear] [unclear]
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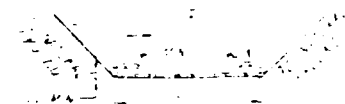
PROFILE ALONG E. OF PRINCIPAL RAILWAY



PROFILE ALONG S. OF PRINCIPAL RAILWAY

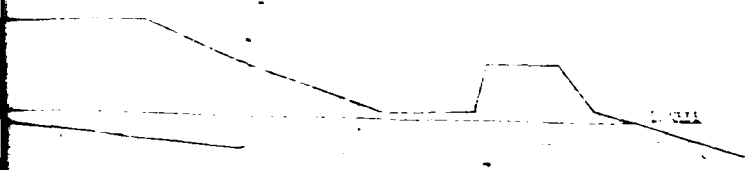


SEE ELEVATION FOR HEIGHT OF CULVERT

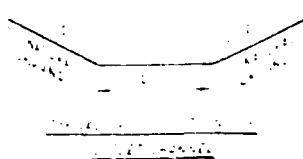


SEE ELEVATION FOR HEIGHT OF CULVERT

PRINCIPAL DRIVEWAY

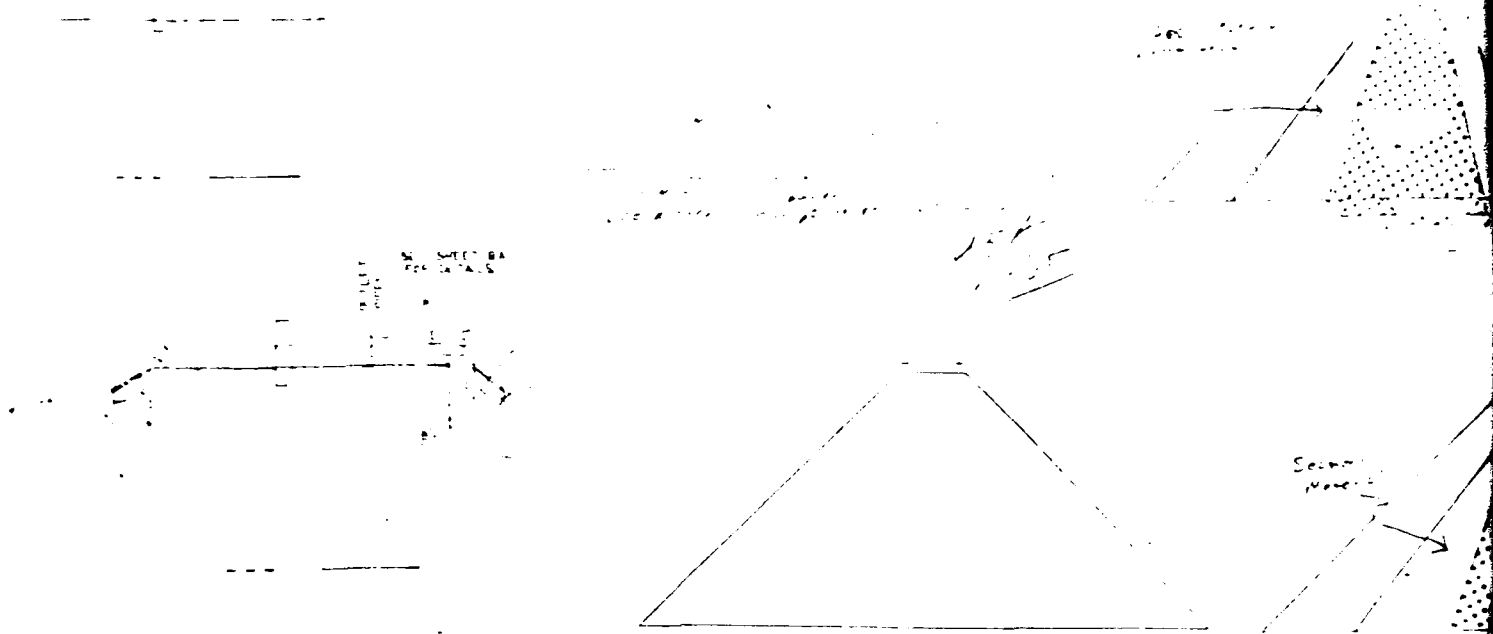


FEET OF BENCH



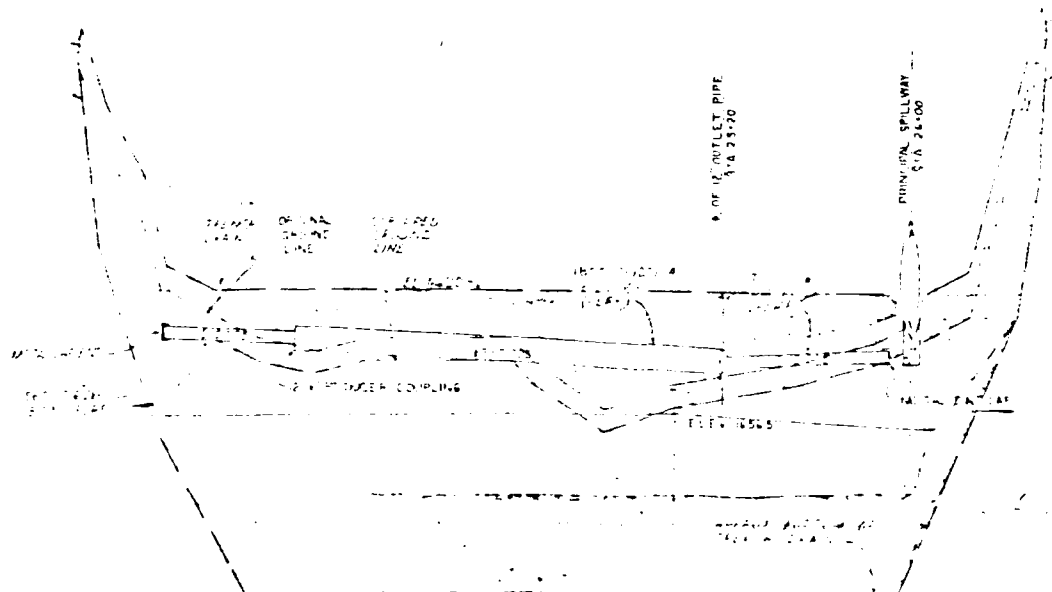
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ISCHUA CREEK WATERSHED PROJECT	
FLOODWATER CONTROL NO. 100-100-1	
CATTARAUGUS COUNTY, NEW YORK	
PROFILES	
U.S. DEPARTMENT OF AGRICULTURE	
SOIL CONSERVATION SERVICE	
BY: [Signature]	DATE: [Date]
CHECKED BY: [Signature]	DATE: [Date]
APPROVED BY: [Signature]	DATE: [Date]

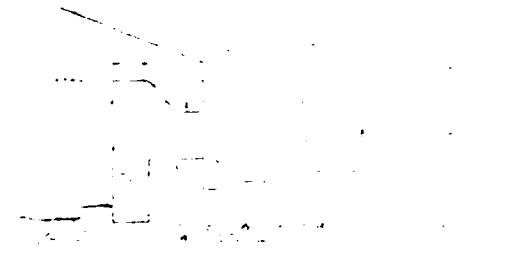
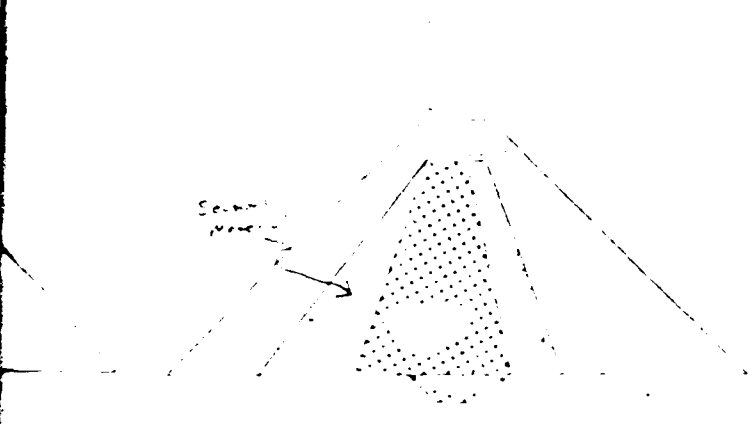
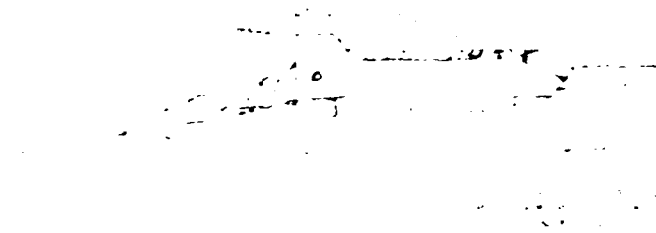
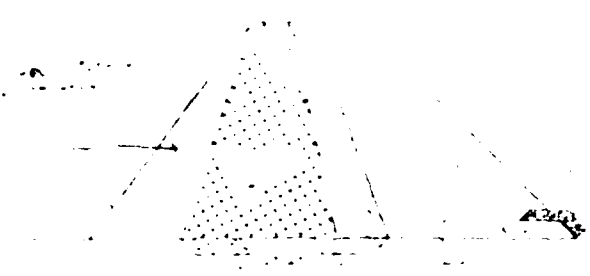


2. SEE IN DETAIL FOR LAYOUT OF TRENCHES IN TRAIL WASH AREA

SEE IN DETAIL FOR TRENCH LAYOUT



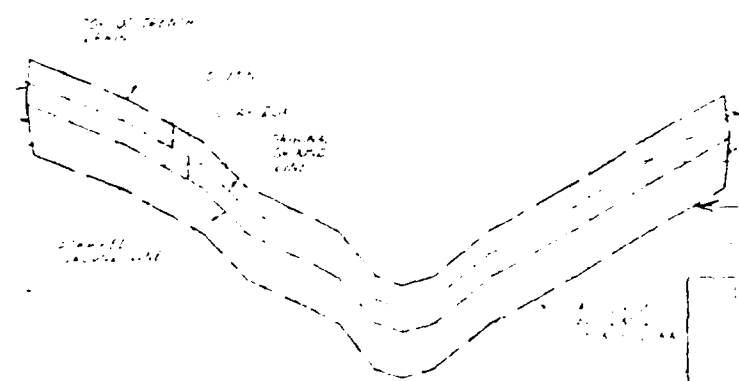
PROFILE VIEW OF TRENCH DRAIN NO. 2



See page 1 for details



SECTION

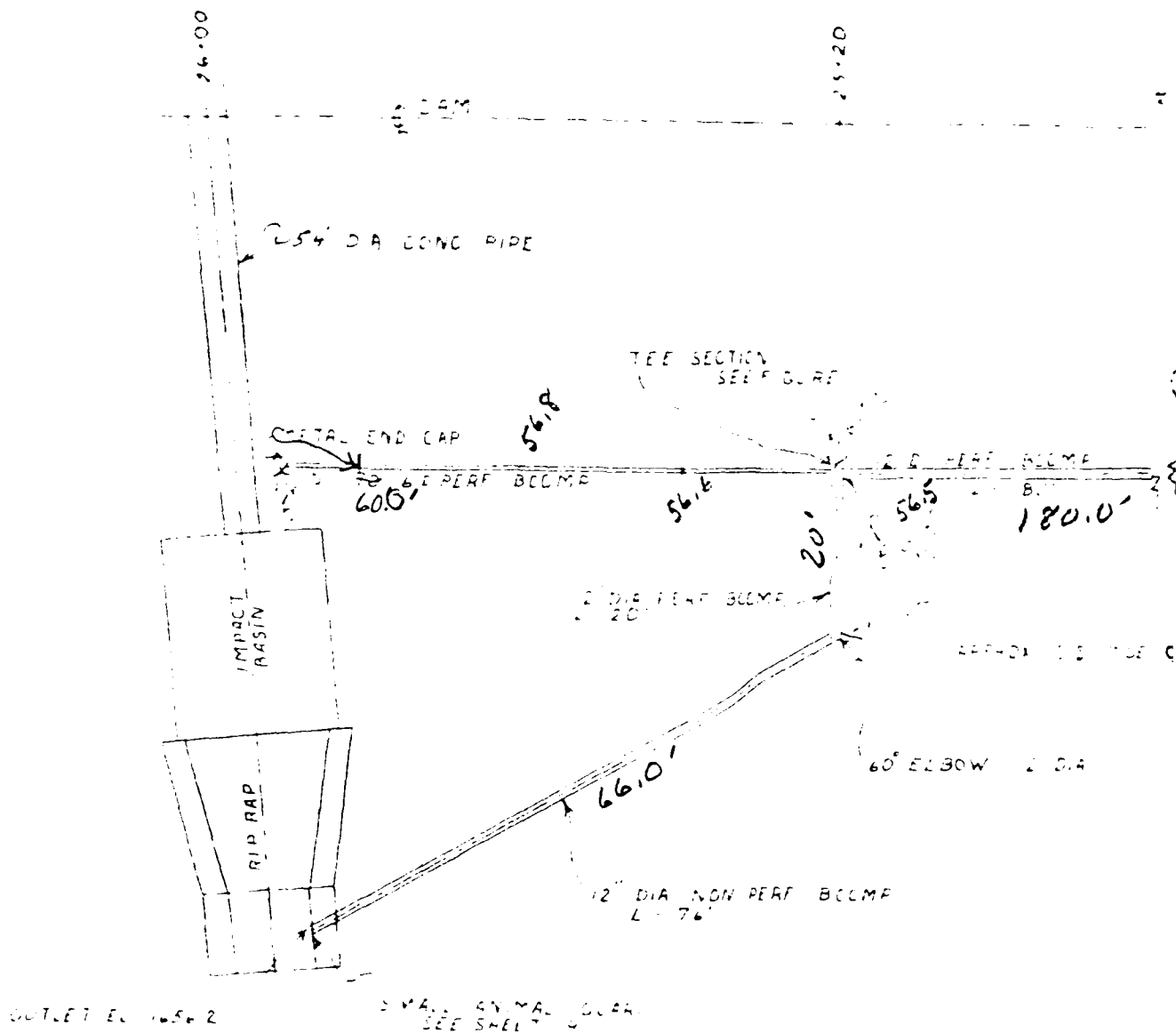


See page 1 for details

AS BUILT

SEE PAGE 1 FOR DETAILS

<p>SECTION 1 - TRENCH</p> <p>SECTION 2 - TRENCH</p> <p>SECTION 3 - TRENCH</p> <p>SECTION 4 - TRENCH</p> <p>SECTION 5 - TRENCH</p> <p>SECTION 6 - TRENCH</p> <p>SECTION 7 - TRENCH</p> <p>SECTION 8 - TRENCH</p> <p>SECTION 9 - TRENCH</p> <p>SECTION 10 - TRENCH</p> <p>SECTION 11 - TRENCH</p> <p>SECTION 12 - TRENCH</p> <p>SECTION 13 - TRENCH</p> <p>SECTION 14 - TRENCH</p> <p>SECTION 15 - TRENCH</p> <p>SECTION 16 - TRENCH</p> <p>SECTION 17 - TRENCH</p> <p>SECTION 18 - TRENCH</p> <p>SECTION 19 - TRENCH</p> <p>SECTION 20 - TRENCH</p> <p>SECTION 21 - TRENCH</p> <p>SECTION 22 - TRENCH</p> <p>SECTION 23 - TRENCH</p> <p>SECTION 24 - TRENCH</p> <p>SECTION 25 - TRENCH</p> <p>SECTION 26 - TRENCH</p> <p>SECTION 27 - TRENCH</p> <p>SECTION 28 - TRENCH</p> <p>SECTION 29 - TRENCH</p> <p>SECTION 30 - TRENCH</p> <p>SECTION 31 - TRENCH</p> <p>SECTION 32 - TRENCH</p> <p>SECTION 33 - TRENCH</p> <p>SECTION 34 - TRENCH</p> <p>SECTION 35 - TRENCH</p> <p>SECTION 36 - TRENCH</p> <p>SECTION 37 - TRENCH</p> <p>SECTION 38 - TRENCH</p> <p>SECTION 39 - TRENCH</p> <p>SECTION 40 - TRENCH</p> <p>SECTION 41 - TRENCH</p> <p>SECTION 42 - TRENCH</p> <p>SECTION 43 - TRENCH</p> <p>SECTION 44 - TRENCH</p> <p>SECTION 45 - TRENCH</p> <p>SECTION 46 - TRENCH</p> <p>SECTION 47 - TRENCH</p> <p>SECTION 48 - TRENCH</p> <p>SECTION 49 - TRENCH</p> <p>SECTION 50 - TRENCH</p> <p>SECTION 51 - TRENCH</p> <p>SECTION 52 - TRENCH</p> <p>SECTION 53 - TRENCH</p> <p>SECTION 54 - TRENCH</p> <p>SECTION 55 - TRENCH</p> <p>SECTION 56 - TRENCH</p> <p>SECTION 57 - TRENCH</p> <p>SECTION 58 - TRENCH</p> <p>SECTION 59 - TRENCH</p> <p>SECTION 60 - TRENCH</p> <p>SECTION 61 - TRENCH</p> <p>SECTION 62 - TRENCH</p> <p>SECTION 63 - TRENCH</p> <p>SECTION 64 - TRENCH</p> <p>SECTION 65 - TRENCH</p> <p>SECTION 66 - TRENCH</p> <p>SECTION 67 - TRENCH</p> <p>SECTION 68 - TRENCH</p> <p>SECTION 69 - TRENCH</p> <p>SECTION 70 - TRENCH</p> <p>SECTION 71 - TRENCH</p> <p>SECTION 72 - TRENCH</p> <p>SECTION 73 - TRENCH</p> <p>SECTION 74 - TRENCH</p> <p>SECTION 75 - TRENCH</p> <p>SECTION 76 - TRENCH</p> <p>SECTION 77 - TRENCH</p> <p>SECTION 78 - TRENCH</p> <p>SECTION 79 - TRENCH</p> <p>SECTION 80 - TRENCH</p> <p>SECTION 81 - TRENCH</p> <p>SECTION 82 - TRENCH</p> <p>SECTION 83 - TRENCH</p> <p>SECTION 84 - TRENCH</p> <p>SECTION 85 - TRENCH</p> <p>SECTION 86 - TRENCH</p> <p>SECTION 87 - TRENCH</p> <p>SECTION 88 - TRENCH</p> <p>SECTION 89 - TRENCH</p> <p>SECTION 90 - TRENCH</p> <p>SECTION 91 - TRENCH</p> <p>SECTION 92 - TRENCH</p> <p>SECTION 93 - TRENCH</p> <p>SECTION 94 - TRENCH</p> <p>SECTION 95 - TRENCH</p> <p>SECTION 96 - TRENCH</p> <p>SECTION 97 - TRENCH</p> <p>SECTION 98 - TRENCH</p> <p>SECTION 99 - TRENCH</p> <p>SECTION 100 - TRENCH</p>	
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LAYOUT OF FILTER DRAINAGE

REFERENCE

USCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO. 1

DESIGNED BY
CHECKED BY
APPROVED BY

25.20

SECTION
SEE FIGURE

12 REDUCER COUPLING

57.4

57.91

12 D. PERF. BCLMF

12 D. PERF. BCLMF

META. END CAP

180.0'

56.0'

57.1

BCLMF

APPROX. 1.5' TOE OF DAM

60° ELBOW 12 DIA

FIGURE 1

ON PERF BCLMF

LAYOUT OF FILTER DRAINAGE PIPES

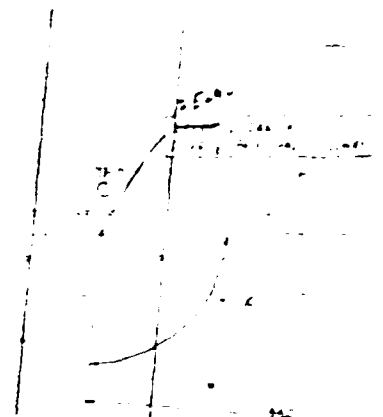
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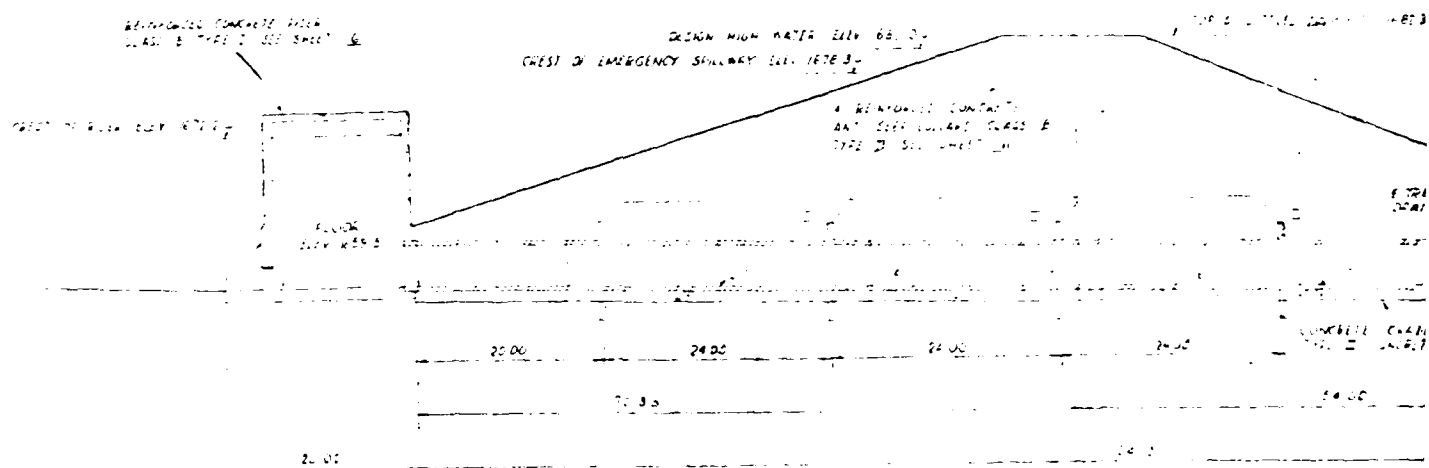
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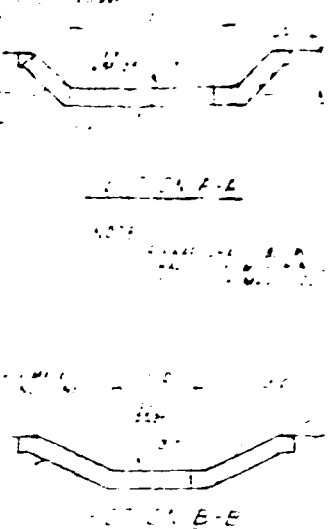
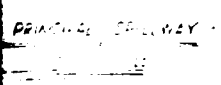


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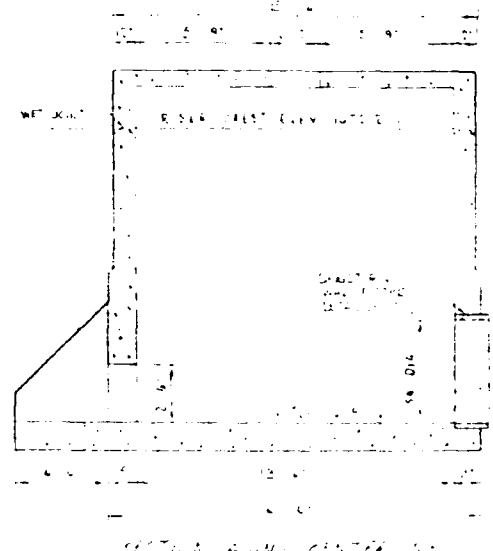
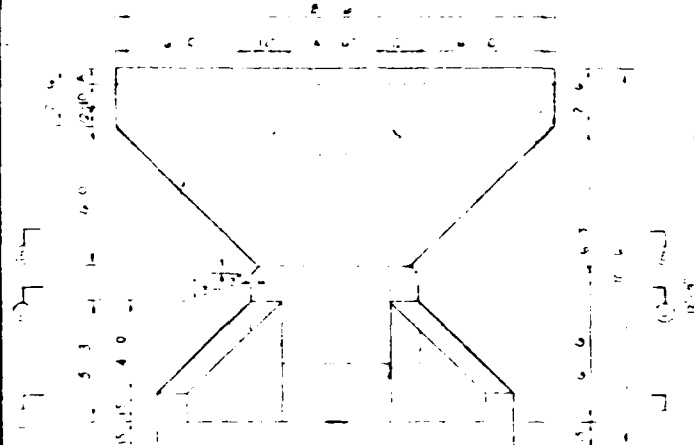
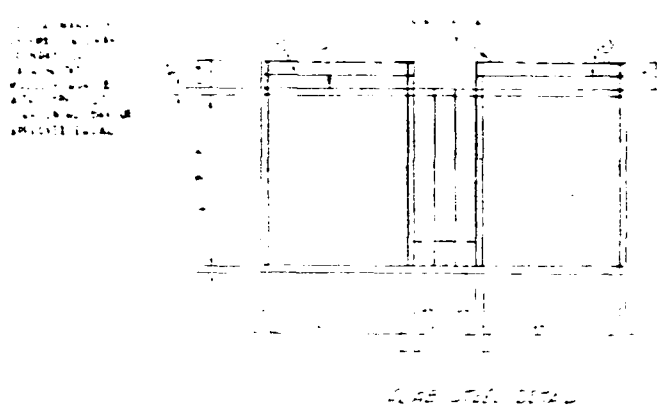
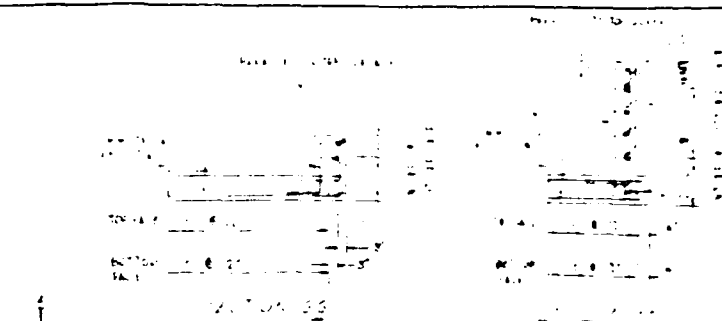
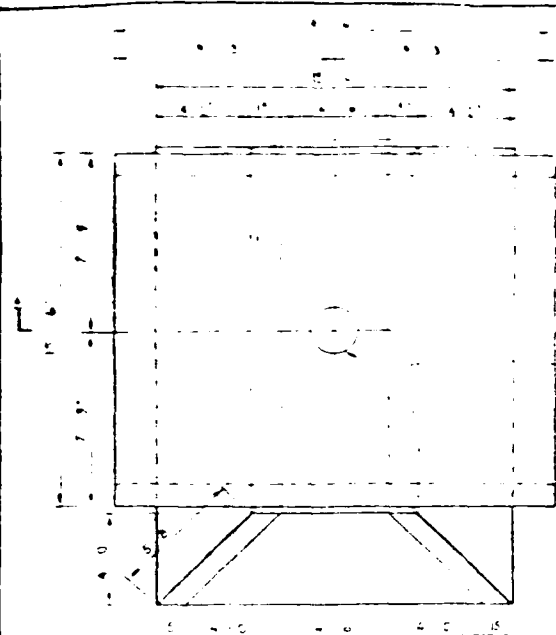
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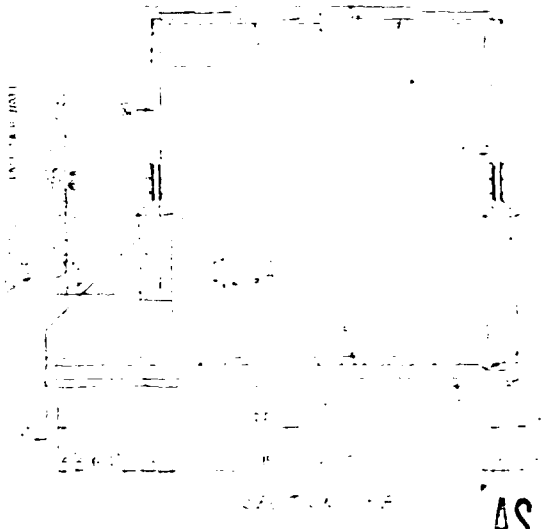
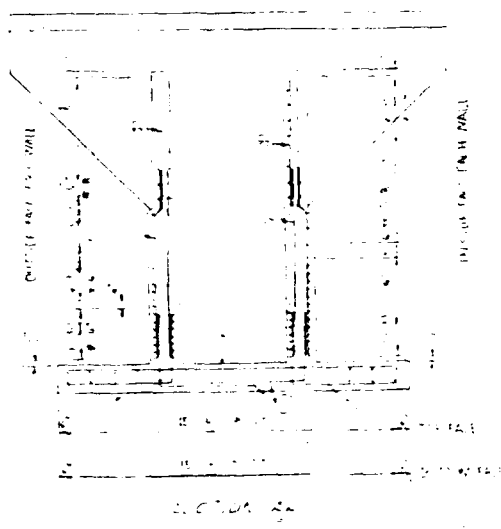
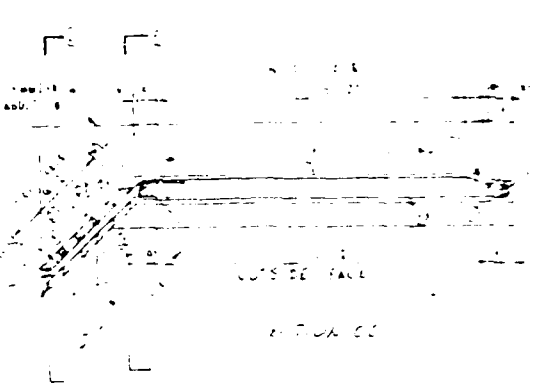
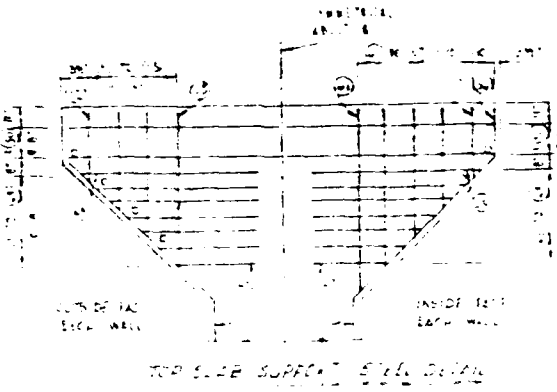
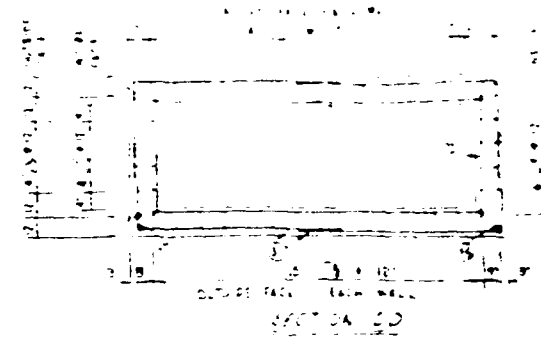
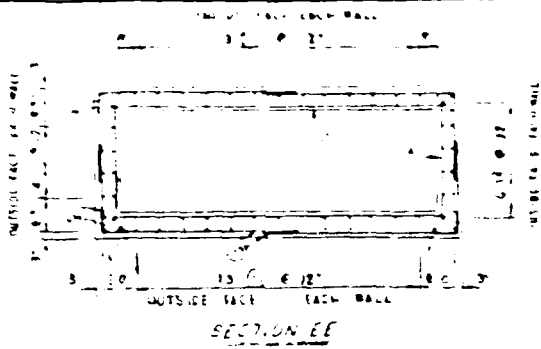
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Abstract

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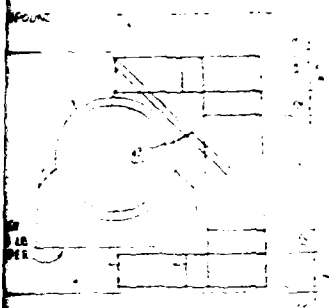


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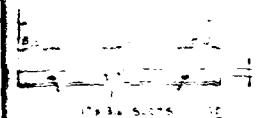
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 WATER LEVEL
 IN THE TANK
 AND THE
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NO REINFORCED CONCRETE DETAILS



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SEE. QUA

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1954, 1955

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P.L. 86-360, Sec. 372, P.A.T. in Comm. On Public Health -
Subcomm. on Nat'l Health & Safety

USIP 41, 2002 2004, NAVY & AIR (D) 1, 1/84, 1/85

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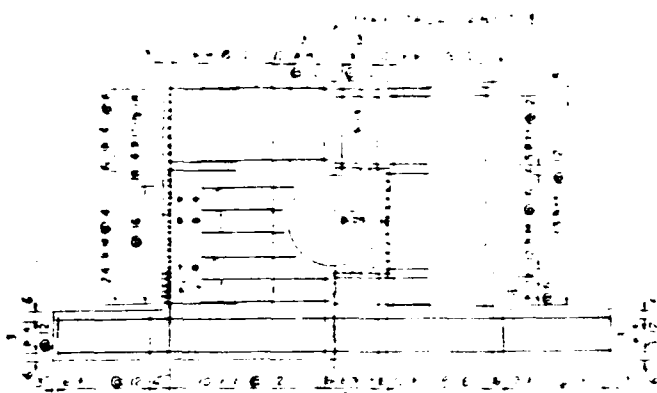
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DETAIL OF FIGURE 10

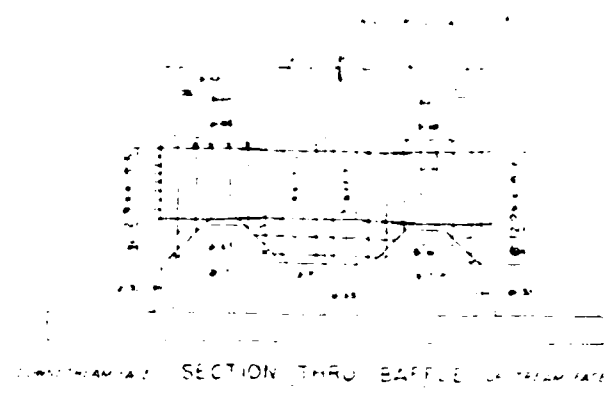
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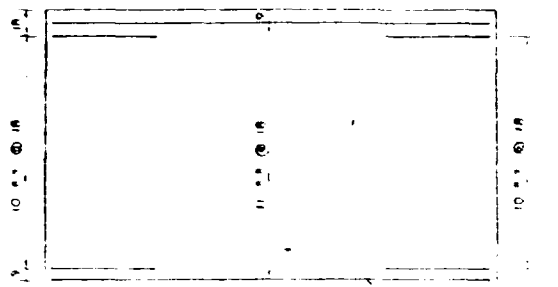
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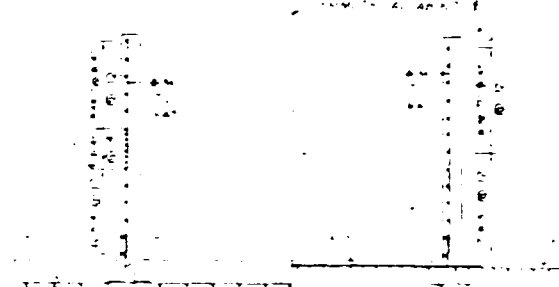
UPSTREAM FACE SECTION D-D DOWNSTREAM FACE



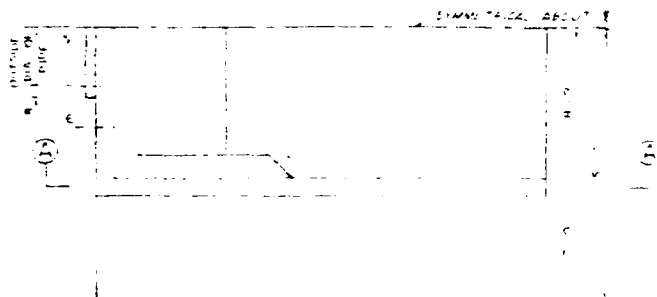
SECTION THRU Baffle DOWNSTREAM FACE



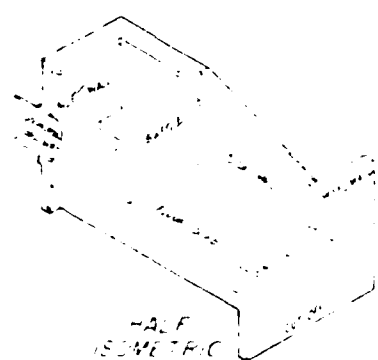
PLAN OF FLOOR SLAB BOTTOM FACE



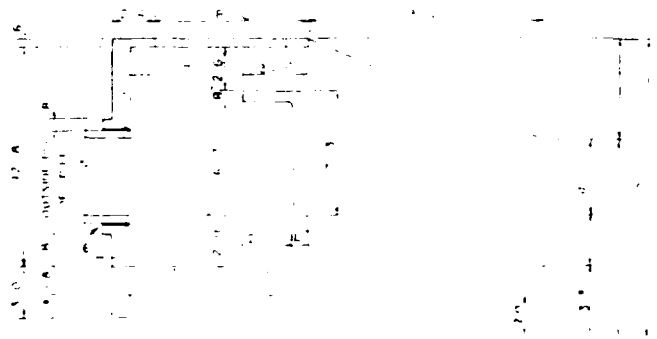
OUTSIDE FACE SECTION C-C INSIDE FACE



PLAN VIEW



HALF ISOMETRIC



SECTION ON E



SECTION THRU Baffle

BAFFLE - UPSTREAM FACE

DOWNSTREAM FACE SECTION B-B DOWNSTREAM FACE

SECTION A-A OUTSIDE FACE

BAR TYPES

SECTION A-A IN TAIL

SECTION ALONG E

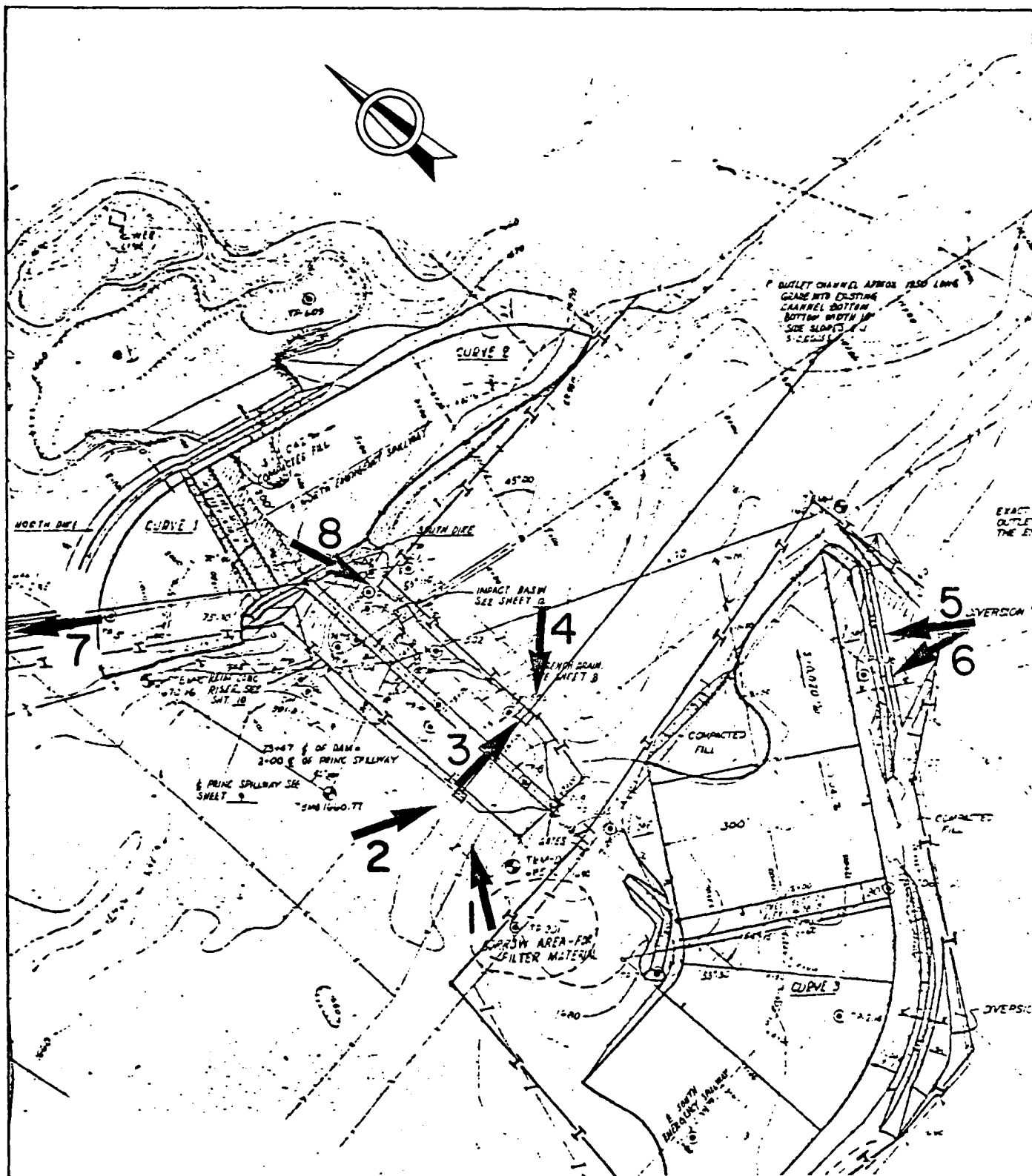
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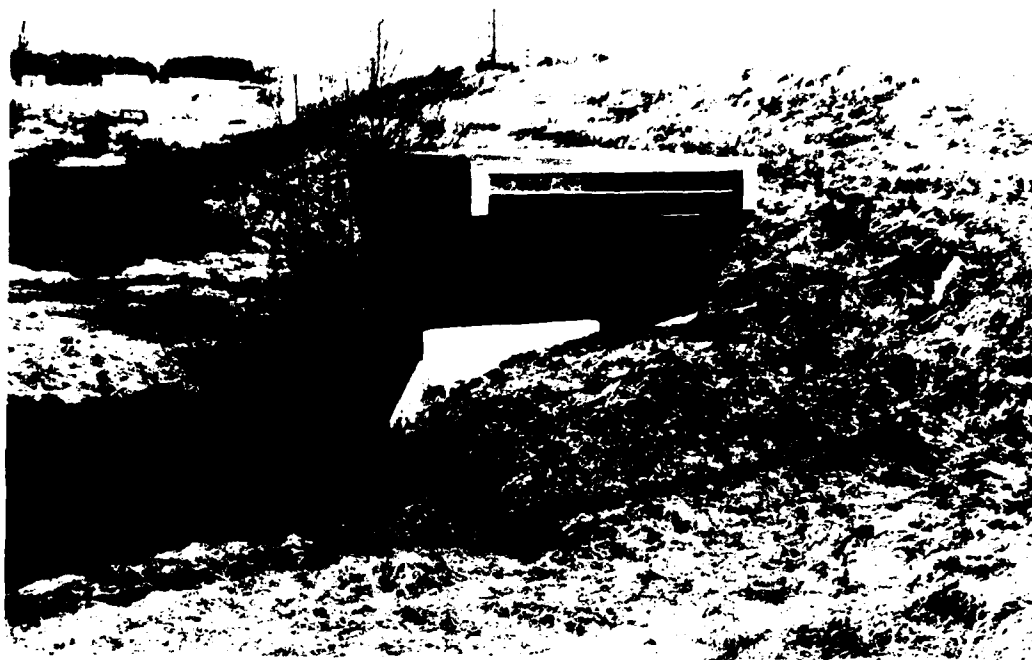
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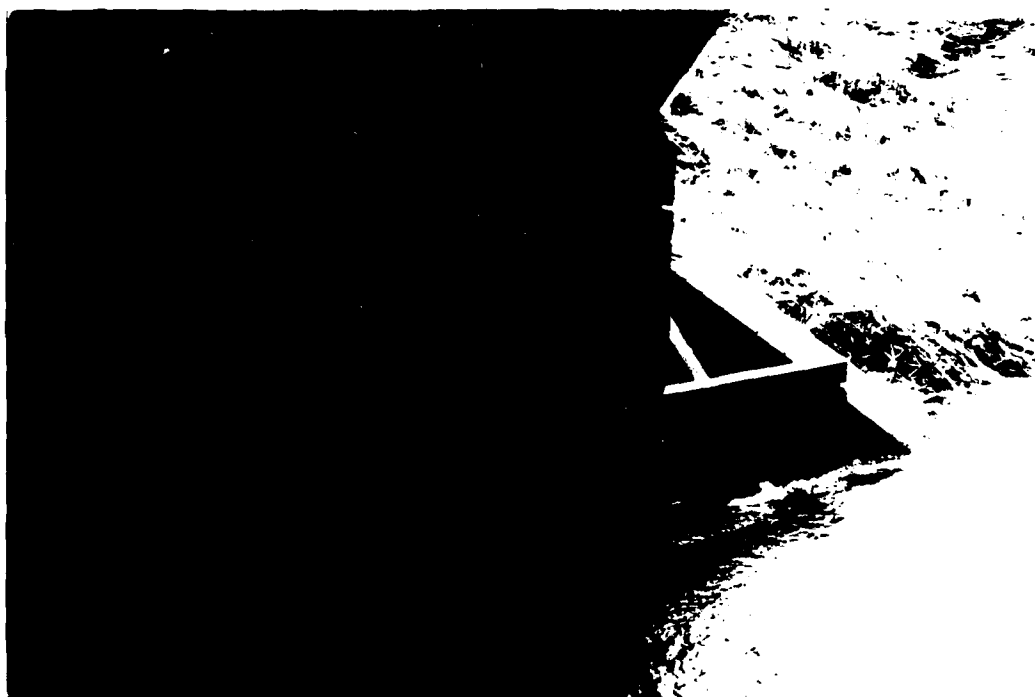
APPENDIX C

PHOTOGRAPHS





1. Principle spillway inlet structure. Note trees.



2. Principle spillway low stage inlet structure showing trash rack.



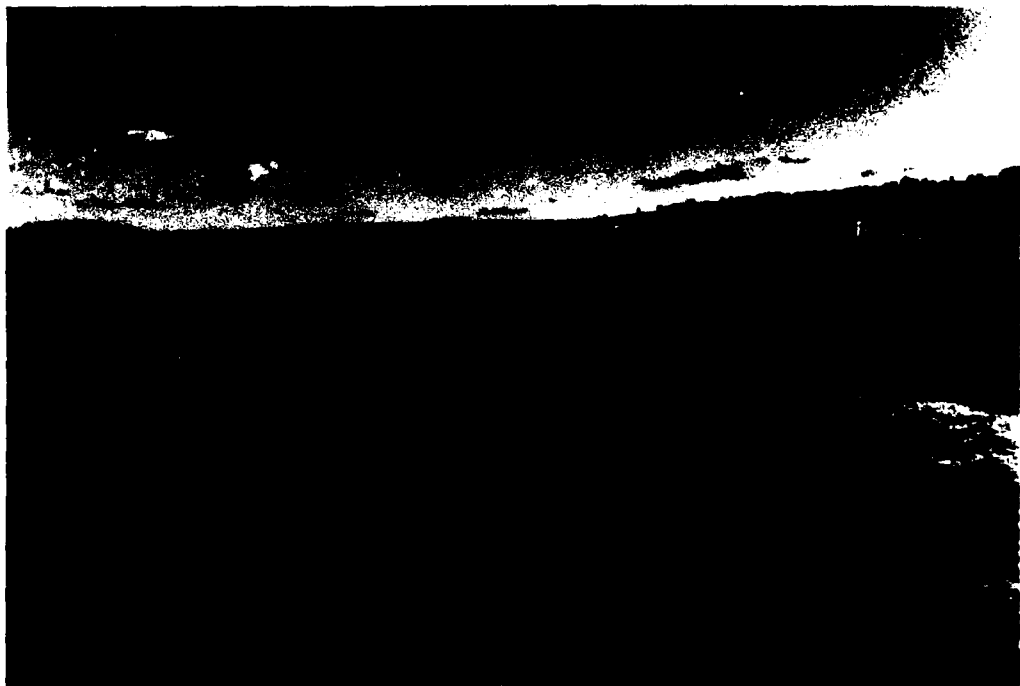
3. Downstream channel.



4. Principle spillway impact basin.



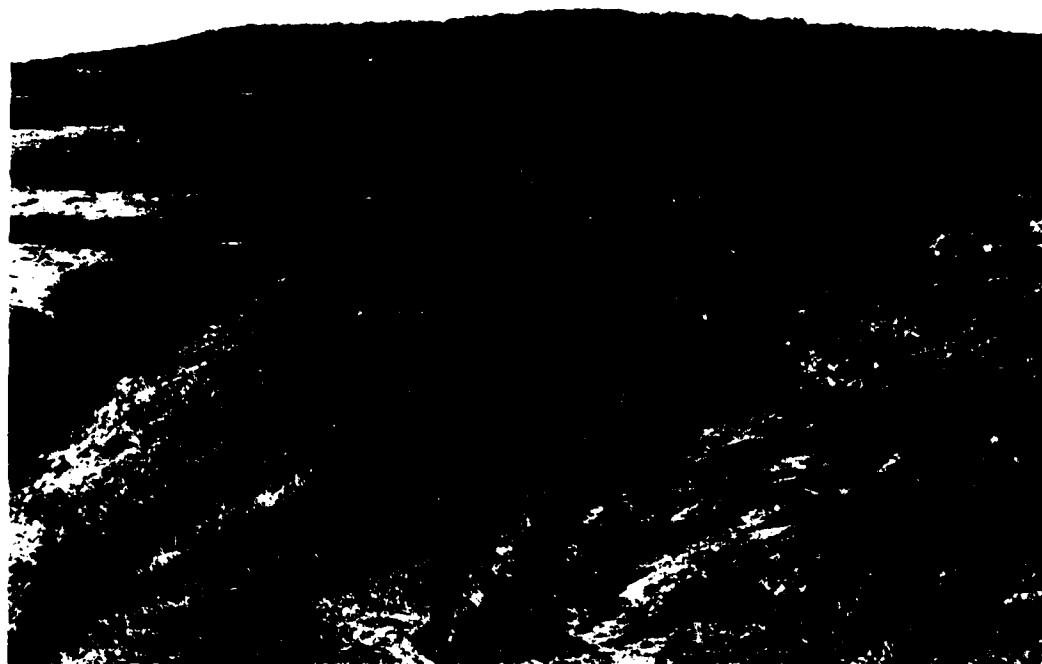
5. Downstream face of dam.



6. South emergency spillway.



7. Crest of dike.



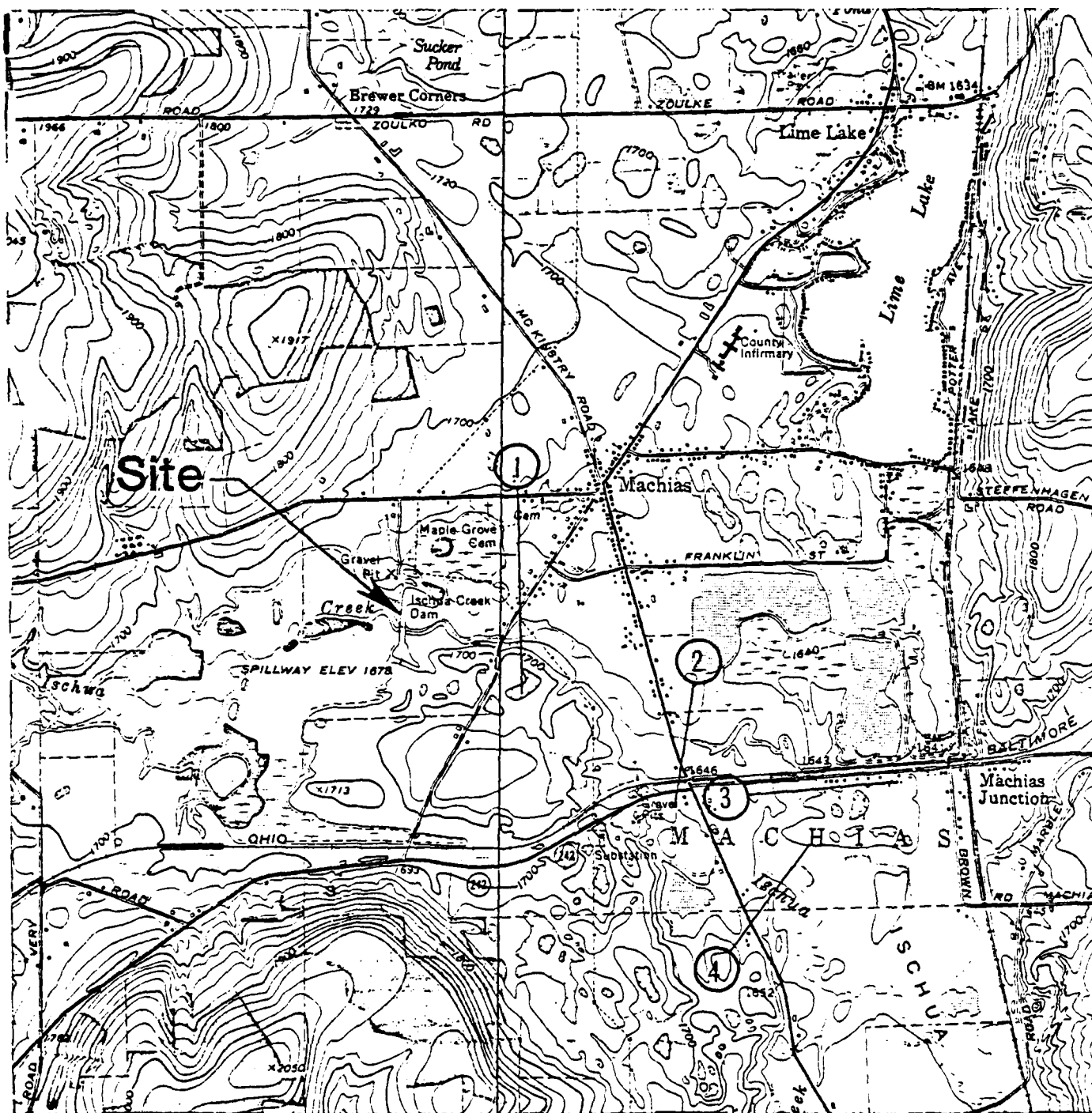
8. Downstream face of dam. Note rutting and trees.

APPENDIX D

HYDRAULIC AND HYDROLOGIC COMPUTATIONS

APPENDIX D

	<u>PAGE</u>
Cross Section Location Plan	D-2
HEC-1 Dam Safety Version Computer Program - Input	D-3
HEC-1 Dam Safety Version Computer Program - Output	D-4
Supporting Calculations	
• Hydrology	D-12
• Spillway Hydraulics	D-14
• Downstream Channel Routing	D-25



Ischua Creek Watershed Dam No. 1

CROSS SECTION LOCATION PLAN

Scale: 1"=2000'

ANALYSIS OF DAM OVERTOPPING USING RATIOS OF PHF DAM NY 583

A1	A2	A3	B	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60	B61	B62	B63	B64	B65	B66	B67	B68	B69	B70	B71	B72	B73	B74	B75	B76	B77	B78	B79	B80	B81	B82	B83	B84	B85	B86	B87	B88	B89	B90	B91	B92	B93	B94	B95	B96	B97	B98	B99	B100	B101	B102	B103	B104	B105	B106	B107	B108	B109	B110	B111	B112	B113	B114	B115	B116	B117	B118	B119	B120	B121	B122	B123	B124	B125	B126	B127	B128	B129	B130	B131	B132	B133	B134	B135	B136	B137	B138	B139	B140	B141	B142	B143	B144	B145	B146	B147	B148	B149	B150	B151	B152	B153	B154	B155	B156	B157	B158	B159	B160	B161	B162	B163	B164	B165	B166	B167	B168	B169	B170	B171	B172	B173	B174	B175	B176	B177	B178	B179	B180	B181	B182	B183	B184	B185	B186	B187	B188	B189	B190	B191	B192	B193	B194	B195	B196	B197	B198	B199	B200	B201	B202	B203	B204	B205	B206	B207	B208	B209	B210	B211	B212	B213	B214	B215	B216	B217	B218	B219	B220	B221	B222	B223	B224	B225	B226	B227	B228	B229	B230	B231	B232	B233	B234	B235	B236	B237	B238	B239	B240	B241	B242	B243	B244	B245	B246	B247	B248	B249	B250	B251	B252	B253	B254	B255	B256	B257	B258	B259	B260	B261	B262	B263	B264	B265	B266	B267	B268	B269	B270	B271	B272	B273	B274	B275	B276	B277	B278	B279	B280	B281	B282	B283	B284	B285	B286	B287	B288	B289	B290	B291	B292	B293	B294	B295	B296	B297	B298	B299	B300	B301	B302	B303	B304	B305	B306	B307	B308	B309	B310	B311	B312	B313	B314	B315	B316	B317	B318	B319	B320	B321	B322	B323	B324	B325	B326	B327	B328	B329	B330	B331	B332	B333	B334	B335	B336	B337	B338	B339	B340	B341	B342	B343	B344	B345	B346	B347	B348	B349	B350	B351	B352	B353	B354	B355	B356	B357	B358	B359	B360	B361	B362	B363	B364	B365	B366	B367	B368	B369	B370	B371	B372	B373	B374	B375	B376	B377	B378	B379	B380	B381	B382	B383	B384	B385	B386	B387	B388	B389	B390	B391	B392	B393	B394	B395	B396	B397	B398	B399	B400	B401	B402	B403	B404	B405	B406	B407	B408	B409	B410	B411	B412	B413	B414	B415	B416	B417	B418	B419	B420	B421	B422	B423	B424	B425	B426	B427	B428	B429	B430	B431	B432	B433	B434	B435	B436	B437	B438	B439	B440	B441	B442	B443	B444	B445	B446	B447	B448	B449	B450	B451	B452	B453	B454	B455	B456	B457	B458	B459	B460	B461	B462	B463	B464	B465	B466	B467	B468	B469	B470	B471	B472	B473	B474	B475	B476	B477	B478	B479	B480	B481	B482	B483	B484	B485	B486	B487	B488	B489	B490	B491	B492	B493	B494	B495	B496	B497	B498	B499	B500	B501	B502	B503	B504	B505	B506	B507	B508	B509	B510	B511	B512	B513	B514	B515	B516	B517	B518	B519	B520	B521	B522	B523	B524	B525	B526	B527	B528	B529	B530	B531	B532	B533	B534	B535	B536	B537	B538	B539	B540	B541	B542	B543	B544	B545	B546	B547	B548	B549	B550	B551	B552	B553	B554	B555	B556	B557	B558	B559	B560	B561	B562	B563	B564	B565	B566	B567	B568	B569	B570	B571	B572	B573	B574	B575	B576	B577	B578	B579	B580	B581	B582	B583	B584	B585	B586	B587	B588	B589	B590	B591	B592	B593	B594	B595	B596	B597	B598	B599	B600	B601	B602	B603	B604	B605	B606	B607	B608	B609	B610	B611	B612	B613	B614	B615	B616	B617	B618	B619	B620	B621	B622	B623	B624	B625	B626	B627	B628	B629	B630	B631	B632	B633	B634	B635	B636	B637	B638	B639	B640	B641	B642	B643	B644	B645	B646	B647	B648	B649	B650	B651	B652	B653	B654	B655	B656	B657	B658	B659	B660	B661	B662	B663	B664	B665	B666	B667	B668	B669	B670	B671	B672	B673	B674	B675	B676	B677	B678	B679	B680	B681	B682	B683	B684	B685	B686	B687	B688	B689	B690	B691	B692	B693	B694	B695	B696	B697	B698	B699	B700	B701	B702	B703	B704	B705	B706	B707	B708	B709	B710	B711	B712	B713	B714	B715	B716	B717	B718	B719	B720	B721	B722	B723	B724	B725	B726	B727	B728	B729	B730	B731	B732	B733	B734	B735	B736	B737	B738	B739	B740	B741	B742	B743	B744	B745	B746	B747	B748	B749	B750	B751	B752	B753	B754	B755	B756	B757	B758	B759	B760	B761	B762	B763	B764	B765	B766	B767	B768	B769	B770	B771	B772	B773	B774	B775	B776	B777	B778	B779	B780	B781	B782	B783	B784	B785	B786	B787	B788	B789	B790	B791	B792	B793	B794	B795	B796	B797	B798	B799	B800	B801	B802	B803	B804	B805	B806	B807	B808	B809	B810	B811	B812	B813	B814	B815	B816	B817	B818	B819	B820	B821	B822	B823	B824	B825	B826	B827	B828	B829	B830	B831	B832	B833	B834	B835	B836	B837	B838	B839	B840	B841	B842	B843	B844	B845	B846	B847	B848	B849	B850	B851	B852	B853	B854	B855	B856	B857	B858	B859	B860	B861	B862	B863	B864	B865	B866	B867	B868	B869	B870	B871	B872	B873	B874	B875	B876	B877	B878	B879	B880	B881	B882	B883	B884	B885	B886	B887	B888	B889	B890	B891	B892	B893	B894	B895	B896	B897	B898	B899	B900	B901	B902	B903	B904	B905	B906	B907	B908	B909	B910	B911	B912	B913	B914	B915	B916	B917	B918	B919	B920	B921	B922	B923	B924	B925	B926	B927	B928	B929	B930	B931	B932	B933	B934	B935	B936	B937	B938	B939	B940	B941	B942	B943	B944	B945	B946	B947	B948	B949	B950	B951	B952	B953	B954	B955	B956	B957	B958	B959	B960	B961	B962	B963	B964	B965	B966	B967	B968	B969	B970	B971	B972	B973	B974	B975	B976	B977	B978	B979	B980	B981	B982	B983	B984	B985	B986	B987	B988	B989	B990	B991	B992	B993	B994	B995	B996	B997	B998	B999	B1000	B1001	B1002	B1003	B1004	B1005	B1006	B1007	B1008	B1009	B1010	B1011	B1012	B1013	B1014	B1015	B1016	B1017	B1018	B1019	B1020	B1021	B1022	B1023	B1024	B1025	B1026	B1027	B1028	B1029	B1030	B1031	B1032	B1033	B1034	B1035	B1036	B1037	B1038	B1039	B1040	B1041	B1042	B1043	B1044	B1045	B1046	B1047	B1048	B1049	B1050	B1051	B1052	B1053	B1054	B1055	B1056	B1057	B1058	B1059	B1060	B1061	B1062	B1063	B1064	B1065	B1066	B1067	B1068	B1069	B1070	B1071	B1072	B1073	B1074	B1075	B1076	B1077	B1078	B1079	B1080	B1081	B1082	B1083	B1084	B1085	B1086	B1087	B1088	B1089	B1090	B1091	B1092	B1093	B1094	B1095	B1096	B1097	B1098	B1099	B1100	B1101	B1102	B1103	B1104	B1105	B1106	B1107	B1108	B1109	B1110	B1111	B1112	B1113	B1114	B1115	B1116	B1117	B1118	B1119	B1120	B1121	B1122	B1123	B1124	B1125	B1126	B1127	B1128	B1129	B1130	B1131	B1132	B1133	B1134	B1135	B1136	B1137	B1138	B1139	B1140	B1141	B1142	B1143	B1144	B1145	B1146	B1147	B1148	B1149	B1150	B1151	B1152	B1153	B1154	B1155	B1156	B1157	B1158	B1159	B1160	B1161	B1162	B1163	B1164	B1165	B1166	B1167	B1168	B1169	B1170	B1171	B1172	B1173	B1174	B1175	B1176	B1177	B1178	B1179	B1180	B1181	B1182	B1183	B1184	B1185	B1186	B1187	B1188	B1189	B1190	B1191	B1192	B1193	B1194	B1195	B1196	B1197	B1198	B1199	B1200	B1201	B1202	B1203	B1204	B1205	B1206	B1207	B1208	B1209	B1210	B1211	B1212	B1213	B1214	B1215	B1216	B1217	B1218	B1219	B1220	B1221	B1222	B1223	B1224	B1225	B1226	B1227	B1228	B1229	B1230	B1231	B1232	B1233	B1234	B1235	B1236	B1237	B1238	B1239	B1240	B1241	B1242	B1243	B1244	B1245	B1246	B1247	B1248	B1249	B1250	B1251	B1252	B1253	B1254	B1255	B1256	B1257	B1258	B1259	B1260	B1261	B1262	B1263	B1264	B1265	B1266	B1267	B1268	B1269	B1270	B1271	B1272	B1273	B1274	B1275	B1276	B1277	B1278	B1279	B1280	B1281	B1282	B1283	B1284	B1285	B1286	B1287	B1288	B1289	B1290	B1291	B1292	B1293	B1294	B1295	B1296	B1297	B1298	B1299	B1300	B1301	B1302	B1303	B1304	B1305	B1306	B1307	B1308	B1309	B1310	B1311	B1312	B1313	B1314	B1315	B1316	B1317	B1318	B1319	B1320	B1321	B1322	B1323	B1324	B1325	B1326	B1327	B1328	B1329	B1330	B1331	B1332	B1333	B1334	B1335	B1336	B1337	B1338	B1339	B1340	B1341	B1342	B1343	B1344	B1345	B1346	B1347	B1348	B1349	B1350	B1351	B1352	B1353	B1354	B1355	B1356	B1357	B1358	B1359	B1360	B1361	B1362	B1363	B1364	B1365	B1366	B1367	B1368	B1369	B1370	B1371	B1372	B1373	B1374	B1375	B1376	B1377	B1378	B1379	B1380	B1381	B1382	B1383	B1384	B1385	B1386	B1387	B1388	B1389	B1390	B1391	B1392	B1393	B1394	B1395	B1396	B1397	B1398	B1399	B1400	B1401	B1402	B1403	B1404	B1405	B1406	B1407	B1408	B1409	B1410	B1411	B1412	B1413	B1414	B1415	B1416	B1417	B1418	B1419	B1420	B1421	B1422	B1423	B1424	B1425	B1426	B1427	B1428	B1429	B1430	B1431	B1432	B1433	B1434	B1435	B1436	B1437	B1438	B1439	B1440	B1441	B1442	B1443	B1444	B1445	B1446	B1447	B1448	B1449	B1450	B1451	B1452	B1453	B1454	B1455	B1456	B1457	B1458	B1459	B1460	B1461	B1462	B1463	B1464	B1465	B1466	B1467	B1468	B1469	B1470	B1471	B1472	B1473	B1474	B1475	B1476	B1477	B1478	B1479	B1480	B1481
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OK, SEG NHECJDB

OK, SEG NHECJDB
ENTER PROJECT NUMBER
00166-00.04
INPUT FILE 7 NY583
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79

PREVIEW OF SEQUENCE OF STRAP NETWORK CALCULATIONS
RUNOFF HYDROGRAPH AT INFLOW
ROUTE HYDROGRAPH TO 1
ROUTE HYDROGRAPH TO 2
ROUTE HYDROGRAPH TO 3
ROUTE HYDROGRAPH TO 4
END OF NETWORK

1.....
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79
.....

RUN DATE: 4/29/
TIME: 1:19 PM

ANALYSIS OF DAM OVERTOPPING USING RATIOS OF PMF DAM NY 583
HYDROLOGIC-HYDRAULIC ANALYSIS OF SAFETY OF ISCHUA CREEK DAM NO. 1
RATIOS OF PMF ROUTED THROUGH THE RESERVOIR AND DOWNSTREAM

JOB SPECIFICATION									
NO	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IFRT	ASTAN
100	0	30	0	0	0	0	-1	4	0
			JOPER	NUT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 6 LRTO= 1
RATIOS= 0.23 0.40 0.50 0.60 0.80 1.00

SUP-AREA RUNOFF COMPUTATION

CALCULATION OF INFLOW HYDROGRAPH TO RESERVOIR
ISYAG ICOMP ICCON IYAPE JPLT JPRPT JNAME ISTANCE IAUTO
INFLOW 0 0 0 0 0 0 0 0 0

HYDROGRAPH DATA
ISYAG TRSDA TRSPE RATIO ISHOW ISAME LOCAL
1 1 13.10 0.00 13.10 0.00 0.000 0 1 C

TRSPC COMPUTED BY THE PROGRAM IS 0.809

LOSS DATA										
LROPT	STKR	DLTKR	RTIOL	ERAIN	STKRS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.00	0.00

UNIT HYDROGRAPH DATA
TF= 6.00 CP=0.50 N

SIGIO= 2.00 RECESION DATA RTIOR= 2.00
QRCNS= -0.10

[illegible]

MO.OA	HR.MN	PERIOD	RAIN	EXCS	LOSS	END-OF-PERIOD FLOW COMP Q	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMT Q
								SUM	26.47	22.72	3.75	236451.
								(672.18	577.18	95.00	6695.54)	

HYDROGRAPH ROUTING

CALCULATION OF OUTFLOW HYDROGRAPH FROM RESERVOIR

CALCULATION OF OUTFLOW HYDROGRAPH FROM RESERVOIR											
ISTAQ	ICOMP	UTFLOW	1	IRFCD	IIAPE	JPLT	JPRT	INAVE	ISAGE	IAUTO	
				ROUTING DATA							
				IRFS	ISAME	IOPT	IPPP		LSTR		
0.0	CLOSS	AVG		1	1	0	0				
	0.00	0.00									
				LAG	APSKK	X	TSK	STORA	ISPRAT		
	NSTPS	NSTUL		0	0.00	0.00	0.00	-1672.	-1		

STAGE	1672.20	1674.00	1676.00	1678.30	1679.00	1680.00	1681.00	1682.00	1682.30	1683.00
	1644.00	1685.00								
FLOW	197.06	260.00	340.00	416.00	1344.00	3917.00	7443.00	11665.00	13135.00	16704.00
	22149.60	24264.00								
CAPACITY=	533.	2318.	3018.	3648.						

ELEVATION= 1672. 1678. 1681. 1682.

CRFL	SPVID	COBW	EXPV	ELEV	COOL	CAREA	EXPL
1678.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA			
TOPEL	COOD	EXPD	DAMWID
1682.3	2.7	1.5	1720.

PEAK OUTFLOW IS 861. AT TIME 50.00 HOURS

PEAK OUTFLOW IS 4601. AT TIME 48.00 HOURS

PEAK OUTFLOW IS 6140. AT TIME 47.00 HOURS

PEAK OUTFLOW IS 7573. AT TIME 47.00 HOURS

PEAK OUTFLOW IS 10148. AT TIME 47.00 HOURS

PEAK OUTFLOW IS 12814. AT TIME 46.50 HOURS

HYDROGRAPH ROUTING

CHANNEL ROUTING -MOD PULS RESERVOIR -1

ISTAO	ICOMP	IECON	ITAPE	JPLI	JPRT	INAPE	ISTAGE	IAUTO
1	1	0	0	0	0	0	0	0

ROUTING DATA

GLLOSS	CLOSS	AVG	IRCS	ISAME	IOPT	IPWP	LSTR
0.0	0.000	0.00	1	1	0	0	0

WSTPS NSTDL LAG AMSKK X TSK STORA ISPRAT

1	0	0	0.000	0.000	0.000	0.	0
---	---	---	-------	-------	-------	----	---

NORMAL DEPTH CHANNEL ROUTING

GN(1)	GN(2)	GN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0500	0.0400	0.0500	1650.0	1680.0	1600.	0.00500

CROSS SECTION COORDINATES--STA,FLEV,STA,ELEV--ETC

STA	FLEV	STA	ELEV
0.00	1680.00	1000.00	1660.00
1000.00	1660.00	1279.00	1653.50
1279.00	1653.50	1400.00	1660.00
1400.00	1660.00	1475.00	1680.00

STORAGE	0.00	2.35	4.74	8.73	17.63	31.58	50.57	74.58	103.52	133.38
	176.16	219.86	268.48	322.03	380.49	442.88	512.19	585.42	662.57	746.65

OUTFLOW	0.00	218.03	671.56	1390.22	2734.95	5036.05	8563.30	13574.09	20288.63	28881.14
	39553.41	52459.34	67775.25	85665.23	106288.66	129800.63	156352.22	186091.09	219161.56	255704.97

STAGE	1650.00	1651.50	1653.10	1654.74	1656.32	1657.89	1659.47	1661.05	1662.63	1664.21
-------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

1665.79 1667.37 1668.95 1670.53 1672.10 1673.68 1675.26 1676.84 1678.42 1680.00
 FLOW 0.00 210.03 671.56 1390.22 2734.95 5036.05 8563.30 13574.09 20282.63 28881.14
 39553.41 52459.34 67775.25 85665.23 106288.66 129800.63 156352.22 186091.09 219161.56 25701.97

MAXIMUM STAGE IS 1653.5

MAXIMUM STAGE IS 1657.6

MAXIMUM STAGE IS 1658.4

MAXIMUM STAGE IS 1659.0

MAXIMUM STAGE IS 1660.0

MAXIMUM STAGE IS 1660.8

HYDROGRAPH ROUTING

CHANNEL ROUTING - MOD PULS REACH 1-2

ISTAG	ICOMP	IECON	ITAPF	JPLT	JPRI	INAPE	ISTAGE	IAUTO
2	1	0	0	0	0	1	0	0
ROUTING DATA								
QLOSS	CLOSS	AVG	IRFS	ISAME	IOPT	IPWP	LSTR	
0.0	0.000	0.00	1	1	0	0	0	
NSTPS NSTDL LAG APSKK X TSK STORA ISPRAT								
1	0	0	0.000	0.000	0.000	0.0	0	

NORMAL DEPTH CHANNEL ROUTING

ON(1)	ON(2)	ON(3)	ELNVI	ELMAV	RLNTH	SEL
0.0000	0.0000	0.0000	1640.0	1660.0	3300.0	0.00300

CROSS SECTION COORDINATES--STA=ELEV,STA=ELEV--ETC

STA	ELEV	STA	ELEV	STA	ELEV
0.00	1660.00	224.00	1643.50	225.00	1640.00
800.00	1600.00	801.00	1660.00	802.00	1660.00

STORAGE	0.00	125.94	157.30	192.62	231.67	274.53	321.18	371.65	425.91	482.98	544.44	74.47	91.30
OUTFLOW	0.00	110.09	11156.20	346.49	14433.55	10240.73	675.32	520.23	22776.38	27897.90	1328.67	2016.08	3024.17
STAGE	1640.00	1641.05	1651.08	1652.63	1660.00	1660.00	1660.00	1660.00	1660.00	1660.00	1660.00	1660.00	1660.00
FLOW	0.00	110.09	11156.20	346.49	14433.55	10240.73	675.32	520.23	22776.38	27897.90	1328.67	2016.08	3024.17

MAXIMUM STAGE IS	1643.5
MAXIMUM STAGE IS	1648.5
MAXIMUM STAGE IS	1649.5
MAXIMUM STAGE IS	1650.1
MAXIMUM STAGE IS	1651.2
MAXIMUM STAGE IS	1652.1

HYDROGRAPH ROUTING

MECHANICAL ROUTING -MOD PULS REACH 2-3										IAUTO	
ISIAQ	ICOPP	ICON	ITAPE	JPLT	JPRI	INAVE	ISTAGE				
3	1	0	0	0	0	0	0			0	
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.00	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT	IPPP			LSTR			
0.0	0.000	1	1	0	0						
ULOSS	CLOSS										
0.0	0.000										
ROUTING DATA											
	AVG	IRRES	ISAME	IOPT							

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0400	0.0400	0.0800	1638.0	1660.0	1900.	0.00100

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC

[illegible]

MAXIMUM STAGE IS 1642.6

MAXIMUM TAGS 15 1999

[illegible]

圖書分類

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MAXIMUM STAGE IS 1642.6
MAXIMUM STAGE IS 1643.2

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS					
				RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
				0.20	0.40	0.50	0.60	0.80	1.00
HYDROGRAPH AT INFLOW	(33.93)	13.10	1	2713.	5425.	6781.	8138.	10250.	13563.
				(76.81)	(153.62)	(192.02)	(230.43)	(307.24)	(384.05)
ROUTED TO	(33.93)	13.10	1	861.	4601.	6140.	7573.	10148.	12814.
				(24.38)	(130.30)	(173.86)	(214.44)	(287.35)	(362.86)
ROUTED TO	(33.93)	13.10	1	840.	4598.	6143.	7568.	10150.	12813.
				(23.80)	(130.21)	(173.95)	(214.29)	(287.40)	(362.81)
ROUTED TO	(33.93)	13.10	1	747.	4598.	6144.	7572.	10149.	12823.
				(21.14)	(130.19)	(173.98)	(214.41)	(287.39)	(363.11)
ROUTED TO	(33.93)	13.10	1	570.	4589.	6134.	7555.	10127.	12821.
				(16.14)	(129.95)	(173.69)	(213.94)	(286.77)	(363.06)
ROUTED TO	(33.93)	13.10	1	509.	4590.	6120.	7562.	10128.	12816.
				(14.40)	(129.90)	(173.30)	(214.13)	(286.80)	(362.90)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1											
ELEVATION		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM					
STORAGE		1672.20		1678.30		1682.30					
OUTFLOW		933.		2318.		3648.					
		197.		416.		13135.					
RATIO		MAXIMUM		MAXIMUM		MAXIMUM		DURATION		TIME OF	
OF		DEPTH		STORAGE		OUTFLOW		OVER TOP		MAX OUTFLOW	
PME		OVER DAM		AC-FT		CFS		HOURS		POURS	
0.20		0.00		2411.		861.		0.00		50.00	
5.40		0.00		2844.		4631.		0.00		48.00	
0.50		0.00		2965.		6140.		0.00		47.00	
0.60		0.00		3082.		7573.		0.00		47.00	
0.80		0.00		3354.		10148.		0.00		47.00	
1.00		0.00		3619.		12814.		0.00		46.50	

PLAN 1 STATION 1				
RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS	
0.20	840.	1653.5	50.00	
0.40	4598.	1657.6	48.00	
0.50	6143.	1658.4	47.50	
0.60	7568.	1659.0	47.00	
0.80	10150.	1660.0	47.00	
1.00	12813.	1660.8	47.00	

PLAN 1 STATION 2				
RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS	
0.20	747.	1643.5	50.00	
0.40	4598.	1648.5	48.00	
0.50	6144.	1649.5	47.50	
0.60	7572.	1650.1	47.00	
0.80	10149.	1651.2	47.00	
1.00	12823.	1652.1	47.00	

PLAN 1 STATION 3				
RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS	
0.20	570.	1642.0	50.00	
0.40	4589.	1645.0	48.50	
0.50	6134.	1645.7	47.50	
0.60	7555.	1646.3	47.50	
0.80	10127.	1647.2	47.00	
1.00	12821.	1648.1	47.00	

PLAN 1 STATION 4				
RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS	
0.20	504.	1639.0	50.00	
0.40	4590.	1641.3	48.50	
0.50	6120.	1641.7	48.00	
0.60	7562.	1642.1	47.50	
0.80	10128.	1642.6	47.50	
1.00	12816.	1643.2	47.00	

BY PLP DATE 3/17/81 ERDMAN, ANTHONY, ASSOCIATES SHEET 1 OF 10
S.R. DATE 3/17/81 SUBJECT DAM 583 HYDROLOGY SUB-SHEET NO. 1
 OWNER PROJECT NAME HEC-103 DAM INSPECTION 80166-00-07

DAM 583 ISCHUA CREEK DAM #1

REF. QUAD WEST VALLEY, NY.
 RAWSON, N.Y.

DRAINAGE DISTANCE

DISTANCE L & LCA MEAS. WITH MAP MEASURING WHEEL (1" = 2000')

COMPUTATIONS FOR L DISTANCE

RUN	MEAS. DIST.	AVG. DIST.	COEF.	L DISTANCE
-----	-------------	------------	-------	------------

A 1	14.6"			
2	14.9"			
3	<u>14.8"</u>			

$$44.3 \div 3 = 14.77 \times 2000' = 29540 \text{ FT}$$

B	21.0"			
2	<u>21.0"</u>			

$$42.0 \div 2 = 21.0 \times 2000' = 42000 \text{ FT.}$$

C 1	21.7"			
2	<u>21.7"</u>			

$$43.4 \div 2 = 21.7 \times 2000' = 43400 \text{ FT.} *$$

* L = 43400 FT (USED RUN C)

COMPUTATIONS FOR LCA DISTANCE

RUN	MEAS. DIST.	AVG. DIST.	COEF.	LCA DISTANCE
-----	-------------	------------	-------	--------------

C 1	6.8"			
2	<u>6.8"</u>			

$$13.6" \div 2 = 6.8" \times 2000' = 13600 \text{ FT} *$$

* LCA = 13600 FT.

$$\tau_p = C_t (L L_{ca})^{0.3}$$

$$\tau_r = \frac{\tau_p}{5.5}$$

$$C_t = 2.2$$

$$C_p = 0.57 \rightarrow 0.50$$

$$\tau_{PR} = \tau_p + 0.25 (\tau_R - \tau_r)$$

$$L = 43400 \text{ ft} = 8.22 \text{ mi} \checkmark$$

$$L_{ca} = 13600 \text{ ft} = 2.58 \text{ mi} \checkmark$$

$$\tau_p = 2.2 (8.22 \times 2.58)^{0.3} = 5.50 \text{ hr.} \checkmark$$

$$\tau_r = \frac{5.5}{5.5} = 1.0 \text{ hr} \Rightarrow \tau_R = 3.0 \text{ hr.} \checkmark$$

$$\tau_{PR} = 5.5 + 0.25 (3.0 - 1.0) = 6.0 \text{ hr.} \checkmark$$

WATERSHED

ISCHUA CREEK 1A MAINLY CONSISTS OF SWAMPS. THEREFORE
IT'S STORAGE CAPACITY IS MORE THAN OTHER WATERSHEDS
WHICH DO NOT HAVE SUCH STORAGE CAPACITY.

DUE TO THE ABOVE JUDGMENT, THE VALUE OF C_t IS
INCREASED FROM 2.0 TO 2.2 AND THE VALUE OF
 C_p WOULD BE DECREASED FROM 0.63 TO 0.57 0.50

DAM 583 HYDRAULICS

SERVICE SPILLWAY

54" ϕ RCP \checkmark w/ $4\frac{1}{2}' \times 13\frac{1}{2}'$ RISER. \checkmark

FROM DESIGN REPORT : $Q_s = 416$ @ ELEV. 1678.3 \checkmark

$Q_s = 0$ @ ELEV. 1672.2 \checkmark

THE CROSS SECTIONAL AREA OF RCP IS ASSUMED TO CONTROL.

$$Q_s = C_o A_o \sqrt{2g H_o}$$

$$A_o = [(54/12)^2 / 4] \pi = 15.90 \text{ ft}^2 \checkmark$$

$$H = 1678.3 - 1672.2 = 6.1' \checkmark$$

$$C_o = \frac{Q_s}{A_o \sqrt{2g H_o}} = \frac{416}{15.90 \sqrt{2 \times 32.2 \times 6.1}} = 1.32$$

$$Q_s = 1.32 \times 15.90 \times (2 \times 32.2)^{0.5} H^{1/2}$$

$$Q_s = 168.43 H^{0.5} \checkmark$$

[Use only for elevations higher than the crest of riser (1672.2)]

$$Q_s = 168.43 H^{0.5}$$

SERVICE SPILLWAY DISCHARGE ELEVATION RELATIONSHIP		
ELEV.	H ₀	Q _s
* 1672.2	0	
1674		
1676		
** 1678.3	6.1	416 ✓
1679	6.8	439 ✓
1680	7.8	470 ✓
1681	8.8	500. ✓
1682	9.8	527 ✓
*** 1682.3	10.1	535 ✓
1683	10.8	554 ✓
1684	11.8	579 ✓
1685	12.8	603 ✓

- * SERVICE SPILLWAY CREST
- ** EMERGENCY SPILLWAY CREST
- *** TOP OF DAM

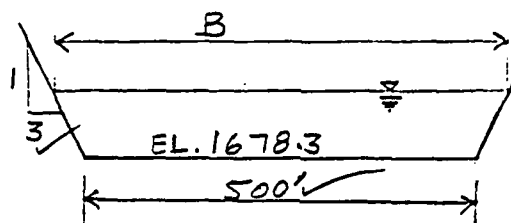
EMERGENCY SPILLWAY

$$Q_c = \sqrt{\frac{g A^3}{B}}$$

FOR $y = 1'$

$$B = 3' + 500' + 3' = 506' \checkmark$$

$$A = \frac{506 + 500}{2} \times 1 = 503 \text{ ft}^2 \checkmark$$



Accumulated cross section of the two emergency spillway cross sections

$$Q_c = \sqrt{\frac{32.2 \times 503^3}{500}} = 2863 \text{ cfs} \checkmark$$

$$S_o = 0.042 \checkmark$$

$$K = \frac{1.49}{n} A R^{2/3} = \frac{1.49}{0.035} (503) \left[\frac{503}{500 + 2(1+9)^{0.5}} \right]^{2/3}$$

$$K = 21319.59 \checkmark$$

$$S_c = \left(\frac{Q_c}{K} \right)^2 = \left(\frac{2863}{21319.59} \right)^2 = 0.018 \checkmark$$

spillway slope > critical slope

$$0.042 > 0.018 \checkmark$$

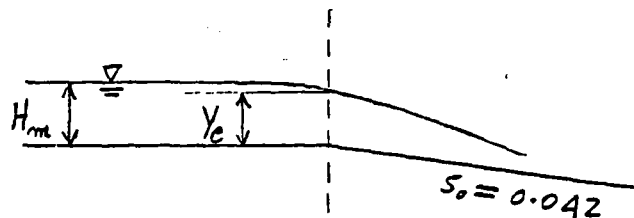
∴ Flow goes through critical depth for $y = 1'$ and also for $y > 1'$

USE TABLE 8-7 FROM "KING + BRATER"

$$Z = 3/1 = 3 \checkmark$$

$$b = 500' \checkmark$$

$$Q_E = C_2 b H_m^{1.5}$$



EMERGENCY SPILLWAY PROFILE

EMERGENCY SPILLWAY, Q - ELEVATION RELATIONSHIP				
H_m	$\frac{H_m Z}{b}$	C_2	Q_E	ELEV.
0	0		0 ✓	1678.3
0.7	0.00	3.09	905 ✓	1679
1.7	0.01	3.11	3447 ✓	1680
2.7	0.02	3.13	6943 ✓	1681
3.7	0.02	3.13	11138 ✓	1682
4.0	0.02	3.15	12600 ✓	1682.3
4.7	0.03	3.17	16150 ✓	1683
5.7	0.03	3.17	21570 ✓	1684
6.7	0.04	3.19	27661 ✓	1685

BY ERT DATE 6/2/81 ERDMAN, ANIMONT, ASSOCIATES SHEET 1
BR. DATE 4/1/81 SUBJECT DAM 583 RESERVOIR AREA SUB-SHEET NO. 5
OWNER PROJECT NAME HEC-1 DAM INSPECTION 80166-00.07

ISCHUA CREEK DAM #1

SA = AREA RESERVOIR SURFACE AREA IN ACRES

SE = RELEV. RESERVOIR ELEVATION IN FEET

REF. U.S. DEPT. A.S.C.A. AS BUILT PLANS DWG.
DESIGN REPORT "

" NY-601-R PG. 2

ELEV. 1672.2 = 167 AC. GIVEN NY-601-R ✓

ELEV. 1678.3 = 280 AC. GIVEN NY-601-R ✓

ELEV. 1681.0 = 320 AC. GIVEN NY-601-R ✓

ELEV. 1682.3 = 347 AC. GIVEN NY-601-R ✓

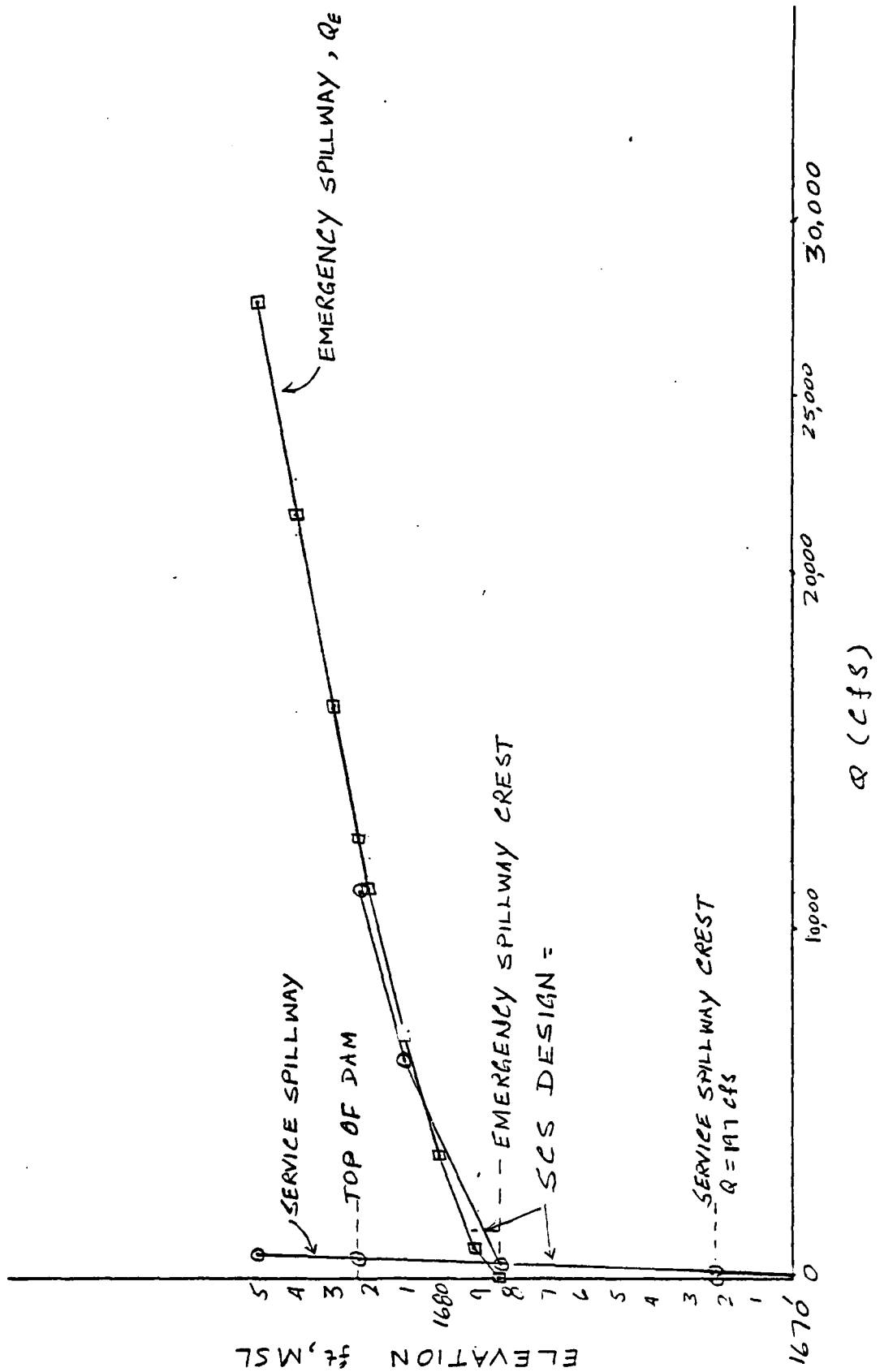
Refer to sub sheet 9. SCS storage values
were used instead of surface area values.

BY B.R. DATE 3/31/81 ERDMAN, ANTHONY, ASSOCIATES SHEET 2 OF 12
XZH DATE 4/1/81 SUBJECT DAM 593 HYDRAULICS SUB-SHEET NO. 1
 OWNER _____ PROJECT NAME DAM INSPECTION B0166-00.07

TOTAL SPILLWAYS DISCHARGE		
ELEV.	$Q_s + Q_e$	RESERVOIR SURFACE AREA
1672.2	* 197	167 AC. ✓
1674	* 260	
1676	* 340	
1678.3	* 416	280 AC. ✓
1679	1,344	
1680	3917	
1681	7443	320 AC. ✓
1682	11665	
1682.3	13135	347 AC. ✓
1683	16704	
1684	22149	
1685	28264	

* SCS DESIGN FLOW IS ADAPTED

SPILLWAY RATING CURVE



E R.R. DATE 3-31-81 ERDMAN, ANTHONY, ASSOCIATES SHEET 10 OF 15
 C 72A DATE 4/1/81 SUBJECT DAM 523 HYDRAULICS SUB-SHEET NO. 8
 OWNER PROJECT NAME DAM INSPECTION 80166-00-07

VALUES ON \$D CARD OF HEC-1 PROGRAM

<u>FIELD</u>	<u>VARIABLE</u>	<u>VALUE</u>
0	ID	\$D
1	TOPEL	1682.3 ✓
2	CØQD	2.7 ✓
3	EXPD	1.5 ✓
4	DAMWID	1230' + 490' = 1720' ✓

KKH
 DATE 4/27/01 ERDMAN, ANTHONY, ASSOCIATES SHEET 11 OF 15
 DATE 5/16/01 SUBJECT Dam 503 - Hydraulics SUB-SHEET NO. 9
 OWNER PROJECT NAME Dam Inspections (E0166-00.07)

DAM 503 - HYDRAULICS

SCS

Use design report storage values, subtracting 29 AF of sediment accumulation.

<u>Elevation</u>	<u>Storage</u>
1672.2	933
1678.3	2318
1681.0	3068
1682.3	3648

Emergency Spillway Velocities

<u>Flood</u>	<u>Q_{max}</u>	<u>Elev.</u>	<u>Q_E</u>	<u>A</u>	<u>V</u>	<u>Comments</u>
PMP	12,814'	1682.23'	12,259'	1305'	9.4'	> 8 ft/sec : erosion ✓
1/2 PMP	6140'	1680.63'	5649'	818'	6.9'	< 8 ft/sec : no erosion ✓

PMF

$$\begin{array}{c} \text{Elev.} \\ \left[\begin{array}{c} 1682 \\ 1682.23 \\ 1682.3 \end{array} \right]^{.23} \end{array} \quad \begin{array}{c} \text{Q}_E \\ \left[\begin{array}{c} 11,138 \\ y \\ 12,600 \end{array} \right]^{.1462} \end{array} \quad \frac{0.23}{0.30} = \frac{\pi}{1462} \quad y = 12,259 \text{ cfs.}$$

since $y_n/b < 0.02$

$$* y_n = 0.789 \left(\frac{Q_n}{b S^{1/2}} \right)^{0.6} = 0.789 \left(\frac{12,259 \times 0.06}{500' (0.042)^{1/2}} \right)^{0.6} = \underline{2.57 \text{ ft}}$$

$$A = \frac{1}{2} (500 + [2.57(3.0)(2) + 500]) \times 2.57 = \underline{1305 \text{ ft}^2}$$

$$V = \frac{Q}{A} = \frac{12,259}{1305} = \underline{9.4 \text{ ft/sec}}$$

1/2 PMF

$$\begin{array}{c} \text{Elev.} \\ \left[\begin{array}{c} 1680 \\ 1680.63 \\ 1681 \end{array} \right]^{.63} \end{array} \quad \begin{array}{c} \text{Q}_E \\ \left[\begin{array}{c} 3447 \\ y \\ 6943 \end{array} \right] \end{array} \quad \frac{0.63}{1.00} = \frac{\pi}{3496} \quad y = 5649 \text{ cfs.}$$

* Ref: Table 103E "Fundamentals of Open Channel Hydraulics", C. Bay

since $y/b < 0.02$ use .

$$y_n = 0.789 \left(\frac{Q_n}{b S_x^{1/2}} \right)^{0.6} = 0.789 \left(\frac{5649 (0.065)}{500 (0.042)^{1/2}} \right)^{0.6} = \underline{1.62 \text{ ft}} \checkmark$$

$$A = \frac{1}{2} (500 + [1.62 (3.0) (2) + 500]) \cdot 1.62 = \underline{818 \text{ ft}^2} \checkmark$$

$$V = Q/A = \frac{5649}{818} = \underline{6.9 \text{ ft/sec}} \checkmark$$

AD-A105 774

ERDMAN ANTHONY ASSOCIATES ROCHESTER NY
NATIONAL DAM SAFETY PROGRAM. ISCHUA CREEK WATERSHED DAM NUMBER --ETC(U)
AUG 81 R J FARRELL

F/G 13/13
DACW51-81-C-0017
NL

UNCLASSIFIED

2 OF 2

AD A
06710



				END DATE FILMED H-81 DTIC
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9/24/81 4/13/81
 B.R. 4/13/81 ISCHUA CREEK DAM 1

DAM DATA FROM AS-BUILT PLAN

DAM TOP ELEV. = 1652.3

DAM INV. ELEV. = 1658.25

REVISED CROSS SECTIONS						
$\frac{1680}{0}$	$\frac{1660}{1000}$	$\frac{1653.5}{1279}$	$\frac{1650}{1280}$	$\frac{1650}{1320}$	$\frac{1653.5}{1321}$	

REACH 1 LENGTH = 1600'

CROSS SECT. $\frac{1630}{0}$, $\frac{1660}{1000}$, $\frac{1650}{1295}$, $\frac{1650}{1305}$, $\frac{1660}{1400}$, $\frac{1660}{1475}$

$\frac{1660}{1400}$, $\frac{1680}{1475}$

SLOPE: DAM INV. - REACH 1 INV. = $h \div L$ = SLOPE

$$1658.3 - 1650 = 8.3 \div 1600' = 0.005$$

REACH 2 LENGTH = 3300'

CROSS SECT. $\frac{1660}{0}$, $\frac{1640}{245}$, $\frac{1640}{255}$, $\frac{1660}{800}$

REVISED CROSS SECTIONS				
$\frac{1660}{0}$	$\frac{1643.5}{224}$	$\frac{1640}{225}$	$\frac{1640}{275}$	$\frac{1643.5}{276}$

SLOPE: REACH 1 INV. - REACH 2 INV. = $h \div L$ = SLOPE

$$1650 - 1640 = 10' \div 3300' = 0.003$$

$\frac{1660}{800}$

REACH 3 LENGTH = 1900'

CROSS SECT. $\frac{1660}{0}$, $\frac{1640}{300}$, $\frac{1638}{505}$, $\frac{1638}{515}$, $\frac{1640}{900}$, $\frac{1660}{1200}$

REVISED CROSS SECTIONS				
$\frac{1660}{0}$	$\frac{1641.5}{300}$	$\frac{1639.5}{494}$	$\frac{1641.5}{526}$	
$\frac{1638}{495}$	$\frac{1638}{525}$	$\frac{1639.5}{526}$	$\frac{1641.5}{526}$	
$\frac{1640}{900}$	$\frac{1641.5}{900}$	$\frac{1660}{1200}$		

SLOPE: REACH 2 INV. - REACH 3 INV. = $h \div L$ = SLOPE

$$1640 - 1638 = 2' \div 1900' = 0.001$$

REACH 4 LENGTH = 1700'

CROSS SECT. $\frac{1640}{0}$, $\frac{1635}{620}$, $\frac{1635}{630}$, $\frac{1640}{775}$

SLOPE: REACH 3 INV. - REACH 4 INV. = $h \div L$ = SLOPE

$$1638 - 1635 = 3' \div 1700' = 0.002$$

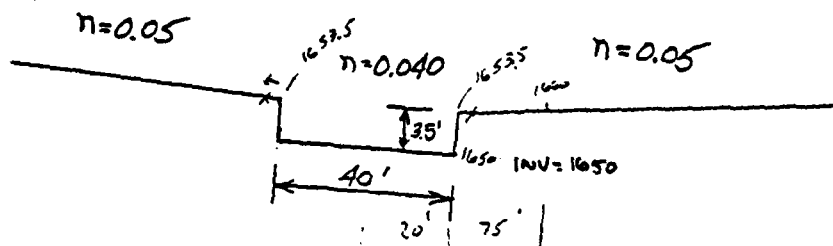
REVISED CROSS SECTION

$\frac{1650}{0}$	$\frac{1640}{250}$	$\frac{1638.5}{609}$	$\frac{1635}{610}$	$\frac{1635}{640}$	$\frac{1638.5}{641}$	$\frac{1640}{775}$	$\frac{1650}{1200}$
		859	860	890	891	1025	

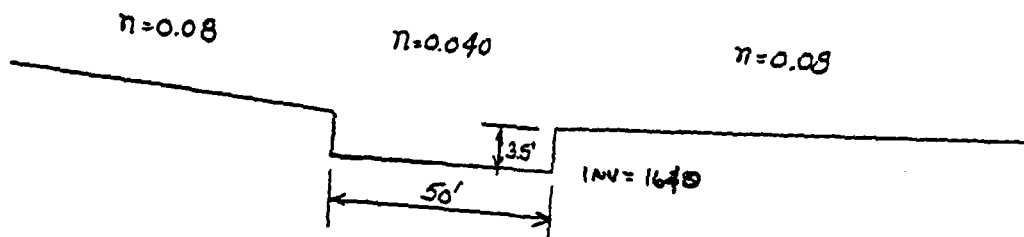
HRTA DATE 4/10/81 ERDMAN, ANTHONY, ASSOCIATES SHEET 15 OF 15
 B.R. DATE 4/13/81 SUBJECT DAM 583 - CHANNEL ROUTINE SUB-SHEET NO. 1
 OWNER PROJECT NAME DAM INSPECTIONS (90166-00.07)

DAM NY 583 - DOWNSTREAM CHANNEL SECTIONS

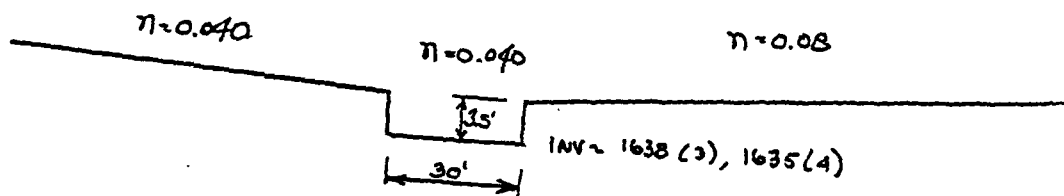
SECTION 1



SECTION 2



SECTION 3 = 4



APPENDIX E

INFORMATION AS CONTAINED IN
THE NATIONAL INVENTORY OF DAMS

INVENTORY OF DAMS

80/11/18. PAGE 127

FORM	ITEM	NOMENCLATURE	DATA	NOMENCLATURE	DATA
467A	1	10	NY00383	28 (SEE BELOW)	----
467B	2	DIVISION	NAD	29 D/S HAZARD	1
467C	3	STATE	33	30 CREST LENGTH	1720+540-2260
467D	4	COUNTY	009 (CATTARAUGUS)	31 SPILLWAY TYPE	U
467E	5	CONGR. DIST.	39	32 SPILLWAY WIDTH	0500+48-548
467F	6	2ND STATE		33 MAX DISCHARGE	12600-13135
467G	7	2ND COUNTY		34 VOLUME	66950
467H	8	2ND CONGR		35 POWER INSTALLED	
467I	9	OFF. DAM NAME	ISCHUA CREEK WATERSHED DAM SITE #1	36 POWER PROPOSED	
467J	10	LATITUDE	42-24.0	37 NO. OF LOCKS	0
467K	11	LONGITUDE	078-30.3	38-45 LOCK LEN/MID	
467L	12	REPORT DATE	07/09/18.	46 OWNER NAME	CATTARAUGUS COUNTY MIKE BAUCH
467M	13	POPULAR NAME	HONE	47 ENGINEERING	SCS
467N	14	IMPOUND. NAME	UNKNOWN	48 CONSTRUCTION	
467O	15	REGION	04	49 REG. DESIGN	DEC
467P	16	BASIN	12	50 REG. CONST	DEC
467Q	17	RIVER/STREAM	ISCHUA CREEK	51 REG. OPER.	DEC
467R	18	D/S CITY-TOWN	MACHIAS	52 REG. MAINT.	DEC
467S	19	DISTANCE	000	53 INSPECTOR	
467T	20	POPULATION	00000500	54 INSP. DATE	
467U	21	TYPE OF DAM	RF	55 INSP. AUTH.	EN CON LAW SECT 15-0507
467V	22	YEAR COMPLETED	1968	56 (SEE BELOW)	
467W	23	PURPOSES	C	57 INSP. INIT.	OLAPCBI
467X	24	STR. HEIGHT	0026	58 UNSAFE	
467Y	25	HVN. HEIGHT	0023	59 URGENCY	15 MAY 81
467Z	26	MAX CAPACITY	0000000-3677	60 INSP. COMPL.	
467AA	27	NORMAL CAP.	0000000-0	61 RPT. APPR.	
467AB	27A	CORPS DIST.	HCH	62 GOV. NOTIF.	DC
467AC	27C	FED. REGULATED	N	63 INSPECTOR	
467AD	27D	PVT. OR FED.	N	64 GOV. RPT.	
467AE	27E	SCS ATO	Y	65 DEFICIENCY	OP
467AF	27F	VERIFY DATE	80/09/25.		

28 REMARK 1-10-19-3201 20-ESTIMATE 27-NOT NORMALLY FULL

56 REMARK 1-10-19-3201 30-NORMALLY FULL RIVER 32-TOTAL OF 2 EMERGENCY SPILLWAYS AND PRINCIPAL SPILLWAY

INSP. REMARK

33-TOTAL OF BOTH EMERGENCY SPILLWAYS AND PRINCIPAL SPILLWAY

EMERGENCY SPILLWAY: PRINCIPAL SPILLWAY IS

A 54" CONDUIT AND 13.5'x4.5' RISER